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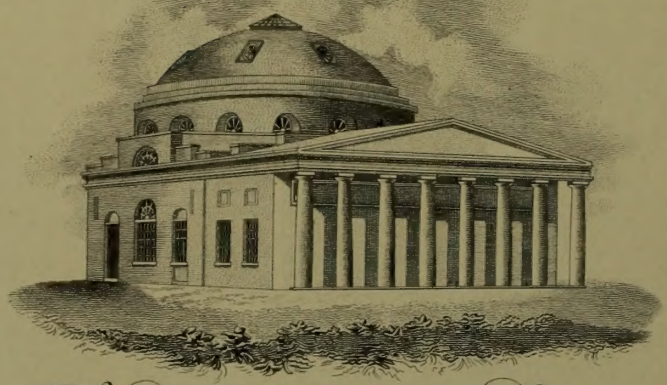

University of Maryland

University of Maryland Theses

Early Doctor of Medicine and Doctor of Physic Dissertations with Corrected Tables of Contents

These manuscripts described as either an Inaugural Dissertation or an Inaugural Essay were presented to the University of Maryland for the Degree of Doctor of Medicine and/or Doctor of Physic during the years 1813-1887. The individual dissertations were bound together during the 1940's. The original tables of contents for the bound volumes contained multiple errors in authors' names, titles, and/or years. To address these errors, an additional "Corrected Table of Contents" has been inserted at the beginning of each volume.

The project team who investigated and corrected the tables of contents were Richard J. Behles, Historical Librarian/Preservation Officer; María Milagros Pinkas, Metadata Management Librarian; Angela Cochrane and Carol Harling-Henry, Resources Division; Sarah Hovde, Abra Schnur and Megan Wolff, Services Division.

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(CORRECTED TABLE OF CONTENTS)

UNIVERSITY OF MARYLAND

THESES

1885, 1886

Author	Title	Year	Notes
Hill, E. W.	Epilepsy	1885	(no title page)
Land, Emerson	Haematuria	1886	
Anderson, J. A.	Typho-Malarial Fever	1886	
De Armon, John	Typhloenteritis	1886	
McLaughlin, John Eugene	Intermittent Fever	1886	
Ohle, Henry C.	Lead Poisoning	1885	
Charles, F. Henry	Erysipelas	1886	(bound backwards)
Kroh, William	Physiological Chemistry of Connective Tissues, Nervous Tissues, and Proteids	1886	
McKinnon, Archibald	Syphilis		
Wegge, William F.	Respiration	1885	
Porter, M. Gibson	Antiseptics	1885	
Silljacks, George J.	Typhoid Fever	1886	(no title page)

HSHSL 2012 for the UM Digital Archive. Sources consulted for corrections: Original Dissertation; University of Maryland Medical Faculty, Matriculation List, 1851-1892; Cordell, Eugene F. "University of Maryland, 1807-1907" (New York : The Lewis Publishing Company, 1907), Volume 2.

UNIVERSITY OF MARYLAND

THESES

1886*

Hill, E. W.	Epilepsy * 1885	43p.
Land, Emerson Jr.	Haematuria	29p.
Anderson, J. A.	Typho-Malarial ~~Malarial~~ Fever	22p.
De Arnon John ~~Dearmon~~, ~~J.~~ Mc.	Typhloenteritis	19p.
McLaughlin, ~~J. E.~~ John Eugene	Intermittent Fever	38p.
Ohle, ~~H.~~ Henry C.	Lead Poisoning * 1885	110p.
Charles, F. Henry	Erysipelas * bound backwards	23p.
Kroh, ~~WM.~~ William	The Physiological Chemistry of Connective Tissues, Nervous Tissues,	33p.
McKinnon, Archibald	Syphilis and Pro[illegible]s	39p.
Wegge, ~~W.~~ William F.	Respiration * 1885	28p.
Porter, M. Gibson	Antiseptics * 1885	21p.
Silljacks, ~~G.~~ George J.	Typhoid Fever	21p.

Epilepsy.

University Hospital

September 10th '85

I am unable to present any thing new concerning this subject. The object of the following remarks being to formulate and classify the material I have been able to collect during a years residence as a clinical assistant.

What is Epilepsy? The number of students is but too many who attempt the answer of this question by committing a "Stereotyped

74

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definition". No "definition" of a sentence or so will answer. Epilepsy is not a disease but a symptom of one. The low and chronic inflammations are symptoms of a constitutional disease known as Scrofula. The rise and zigzag temperature Tympanites, right-iliac pain are symptoms of Typhoid fever. Likewise the sudden attack unconsciousness, insensibility, tonic and clonic spasms and the manifestations to be described presently are by no means a disease

but merely symptoms, a person having these symptoms is called an Epileptic. He has Epilepsy. The word is an unfortunate one. Derived from the Greek verb, λαμβανω and the preposition ἐπι = to seize-upon. Epilepsy is a chronic paroxysmal affection characterized by unconsciousness-insensibility, tonic and clonic spasms. On account of the sudden attack it is known as Falling Sickness among the

The paroxysm varies to such a degree in its manifestations that in the various works on Diseases of the Nervous System

these different forms have been arranged under different headings, and into as many subdivisions as suits the imagination of the author, Hammond divides them into 5 classes. Delsauve into 7 another writer into 12. It seems to me, but three are necessary to a practising physician. viz 1st Unconsciousness with tonic & clonic spasm. Epileptica Gravior, known to the French as Le Grand Mal. 2nd Unconsciousness without convulsions or with local spasm Epileptica Mitior or Le Petit Mal in distinction from the preceding.

3rd Thalamic Epilepsy.

Attack. In the first form is startling. A person is walking along the street. He steps from the curb to cross. Suddenly he is heard to utter a cry shrill and unnatural, seen to throw up his arms and fall like a shot. Striking his head upon the curb inflicts a wound from which the blood gushes forth. For a short time varying from a few moments to half a minute. (Note. All cases may be more or less modified.)

between the teeth and lacerating it. The foam before white now becomes streaked with blood. The veins of the neck are turged and the face livid. These clonic convulsions may last a variable length of time. Half a minute to two minutes. Seldom exceeding the latter number, to an observer they seem very much longer, but by a watch the time will be found to be the above. Gradually the convulsions cease. The frothing stops and the limbs cease twitching, the eyes turn back, the cervix turn back, but the pupils do

[illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [

man. In most cases after the spasms he is unable to speak collectedly. When he becomes able to do so complains of sleepiness. If allowed to sleep does so for hours. On awaking he feels very much refreshed, and except a sense of muscular soreness due to the violent contractions which soon passes off, nothing remains to remind him of his affliction but the wounded tongue. The patients history of his case is interesting. His lapse of memory is complete. A person able to relate a history resembling the above from his own recollection

never had an epileptic fit. The
time of the cry and fall until
the rising up in a dazed manner
and even in some cases the
awaking from the sleep, is to him
a blank. A patient with an aura
will describe his case like this. "I
felt a cold feeling like rushing
wind from the pit of my stomach
towards my head, and the next
thing I knew I was sitting on
the ground with a lot of people
around me". During an attack
the convulsions are nearly the
same on both sides of the body.
After the attack a temporary paral-
ysis is noted on the side that

convulsion the more violently.
This paralysis varies in course
with the severity of the attack.
Hughlings Jackson asserts that, while
true Epileptic paroxysm, however
slight, a paralysis may be observed
of some of the extremities.

Unconsciousness without Spasm or with
local Spasm. Epilepsia Minor. Le
Petit Mal.

History

This variety is still more difficult
to describe than the one previous.
The signs and symptoms being less
severe, more variable, and blending
one with another, it is not easy
to draw the lines so clearly.

A person is perhaps standing engaged in conversation, a momentary blank occurs. It may not attract attention and soon passes off and leaves no mark of discomfort. I immediately take up the conversation again, not losing the subject or train of thought, again - a person may be walking loses himself, but continues to walk and does not slagger. If the attack is more severe he may stop walking drop anything he has in his hands and is speechless. A young lady at tea drops her knife and fork, looks steadily to the front, ceases to eat, and -

denly commences again. Nothing unusual may be noticed by those around her. The duration may only be a few seconds or half a minute. The pupils may dilate, and the complexion pale. Vertigo may sometimes follow, pain, headache, lassitude, numbness. The tendency always is to increase in frequency and severity. When there is "local spasm" the same thing occurs with some additional signs - slight drooling at the mouth a twitching of some of the facial muscles - a hand, arm, foot, or drawing of the head to one side. This is but an advanced stage of

the preceding Unconsciousness without spasm unless treated gradually advances to Unconsciousness with local spasm. If there is always a paralysis after any attack, it must be exceedingly difficult to distinguish it in Le Petit Mal. There is a kind of Epileptic attack that comes between Le Grand Mal and Le Petit mal -- It presents the following features. A sudden attack - No cry. A fall with the patient unconscious for a minute more or less sudden recovery and delirium following - Imagining himself to be hunting for his residence attempts

places his key in somebody's door, or in a room removes all his clothing &c. Whatever resolves through his brain he does. A sudden recovery - a recollection of his position, with or without subsequent stupor.

Malarial Epilepsy — Further research is needed on this point. This form was first reported by Hammond a few years ago. Described by him in his work on Diseases of the Nervous System. Sleep and its Derangements, to consist in Hallucinations seeing devils, Angels, Seance during which dead relatives appear, Ecstasy.

Joy, sadness, Bad news, etc. A nocturnal attack of this kind must resemble a dream. If there is any difference I am unaware of the diagnostic symptoms. This form is probably rare and I have been unable to find any statistics compiled on the subject.

Prodromic Symptoms. When any occur they are of the utmost importance to a physician in guiding him to a correct treatment. In the great majority of cases none occur. They usually consist in undescribable sensations. Formerly

it was the custom to look, in every case of Epilepsy, for a peculiar warning, known as an "Aura". Within a few years it has been discovered that very few have an Aura. The Aura Epileptica was first described by Galen and has been handed down as an accepted fact. The generally received definition to an Aura is "A sensation of Cold Vapor arising from some localized spot and rushing or mounting towards the head". This was the original aura of Galen, but by common consent the term Aura is used now

to describe any sensation preceding an attack, such as, Hunger Thirst, burning at the pit of the stomach, sharp impressions on the tongue, a sense of anxiety or fear. disagreeable smells, colored visions, etc. Hallucinations and visions are not common as auras. Of 218 cases collected by Delasiauve the prodromic symptoms are as follows.

Prodromic Symptoms of the Head 75.

Flashes of light - 33

Headache weight in the head 15

Various localized sensations 13

Throat - 22 cases

Sense of suffocation 9

Shivering 5

Pain Heat or Cold 4

Abdomen 32 cases

Indefinable 19

Cold or Vapor 6

Extremities 94 cases

Numbness, Cramps, Jerkings 36

Aura 20

Genital Organs 5 cases

Aura from the Testicles 5

It will be observed that only the most important sensations are stated above. Sometimes exceptional warnings happen, as a desire to defecate, urinate, perspiration local and general. Colors are sometimes seen.

Red predominates the others in the order of the spectrum. Hughling Jackson had a case who always saw blue. Hammond one who always saw an old woman in a red gown. After an attack color blindness lasting a variable length of time is noticed. Red again first and violet - next. Enlargements of vision may be found - objects of small size are magnified to a ludicrous degree. "Flies as fowls, fowls as oxen". A young lady at school who had been too studious saw spectres - every real object - of enormous size

Children as giants. A watch as a cartwheel. Diminution of vision is less common. Auras of hearing are uncommon.

Etiology. To speak plainly this is an unknown field - an unexplored country. Here and there a point has been located. Post-mortems without number have shown us nothing. In some cases lesions have been found. In the vast majority of cases none - Brain after Brain has been removed and viewed by the best microscopist with all the aids of science, and no "coarse organic lesion" has been

found. So many failures have been made that prominent specialists in this branch doubt the existence of a lesion as the cause. Hereditary tendency stands first. Reynolds cases gave 30 per cent. Echeverria 25 p.c. It is a nervous diathesis so to speak. One generation has nervousness, neuralgia, the next Epilepsy, and a third Insanity. Sexual excesses and sedentary habits have some effect but the amount has undoubtedly been over estimated. More frequently they are the result than causes. Taenia have

ker the cause. Children of consanguineous marriages are prone to Epilepsy. Sex has no influence except in hereditary cases where it develops earlier among girls and then boys. Reynolds and Echeverria state that hereditary cases do not develop before 20 years. The greatest number of cases occur between 10 and 20 years A very small number at birth. Brown Sequard claims girls are the more frequently affected at any age and especially after 20 years. Sun stroke has caused isolated cases. Severely to eighty per cent

occur oftener than once a month. Delsiaure reports a boy with 2500 (Le Grand Mal?) in one month. The general rule is irregularity – a case may occur today – again tomorrow or not for three or four years. Two theories as to the cause stand pre-eminent from a multitude of others. One by Hughlings Jackson of London, who has made the disease of Epilepsy so peculiarly his own. The other is intimately connected with Brown Sequard and has a large number of supporters in this country. Hughlings

Jackson assumes that there must be a lesion in all cases those discernable by the eye or microscope is called by him a "coarse organic lesion" those not so a "discharging lesion". As the gray nerve cells receive, retain, transmit and originate impulses. An impulse coming to a gray cell by a white fibre is transmitted to other cells and returned by other white fibres no superfluous nerve force collects in a healthy nervous system. Hence he reasons that a nerve force received by a-

every nerve cell is transmitted to another one by reason of a change in structure which as yet is not made out. The nerve force collects and reaches a certain point, when, by some nervous Excitation shock, fall of as in stepping from the curb stone in the case related is sufficient to cause a discharge and a paroxysm. The intervals between the shocks are due to the recollection of nerve force, which does so until the explosive point is again reached. Like a coiled rel-

reasons. The attacks to be due from anaemia of the Brain caused by irritation of the vaso motor centre in the Medulla. Thus far they support it by experiments on animals. But there must be something to irritate the centre. So it is supposed that the nerve centre is always in an irritable state. and the source of irritation is derived from the formation of a toxical agent in the blood. The discovery of this toxision and the circumstances under which it is formed

would result in correct treatment. To sum up - this theory is 1st Anaemia from vaso motor spasm. 2nd Vaso motor spasm caused irritation, 3rd Irritation caused by a toxical agent in the blood. Result is an Epileptic fit.

Prognosis. Two to five p.c. are spontaneous cures. The curability diminishes with duration. Inherited cases rarely recover, but improve under treatment. The best Prognosis is before 20 and after 50. Alcoholismus renders all cases unfavorable. The mental powers may be affected for

a short time after a fit, but permanent damage does not occur. Physically there is no change - (Brown-Sequard states poor health to occur in contradiction of most authors) Morally there is always a change for the worse.

Diagnosis. May be confounded with as many as a dozen diseases. The differential diagnosis of which would require as many Theses. Those to be discovered are Cerebral Apoplexy - Hysteria. Uraemia. Opium Poisoning Eclampsia. Alcoholismus. Syncope etc. Syncope - attack slow.

sickening sensations, faintness.
slow recovery. Hysteria, convulsions
are always preceded by prodromal
loss of will power. attack gradual.
pupils not dilated. Epilepsy invar-
iably so. No frothing. loss of con-
sciousness not complete. tonic
and clonic convulsions alternate.
no following stupor, attack always
followed by a flow of limpid
urine. Malingerers overdo the
thing.

Treatment. [illegible]
is unknown all remedies must
be empirically used. The number
of drugs applied to the treatment
of this disease vie with those

used in "Vomiting of Pregnancy". Whatever is done must be accompanied by Hygienic measures. We may divide the treatment into Hygienic Surgical & Medicinal.

Hygienic Weak and anaemic, Iron Quinine & Strychnia. Strumous, Cod liver Oil. Sexual excesses should be avoided although the per cent of cases they cause has been very greatly exaggerated, being more often a result than primary. Regularity of meals. Beer & Malt-liquors of all kinds abstained from. I would not advise the use of

Tea - As to tobacco the authorities are against it. Coffee should be permitted on the weight of Echeverria's statement that it wards off Bromism. Fresh air, Daily baths. A moderate amount of systemic excercise. Do not let the patient drop into melancholia. Amusements and good reading. Novels calculated to excite the nervous system and call into play the emotions to a great degree should be forbidden. Never forgetting that medicinal measures should be combined and the chemical action of the drug upon the

food used looked after.
Surgical. Congenital malformations. Especially of the genitalia. Phimosis + Para phimosis. Absence of vagina - uterus + ovaries present. Imperforate hymen - Other troubles. Cystocele. Rectocele. Pruritus vulvae. Taenia. Elongated uvula. Mechanical injuries. Wounds of the head compound or otherwise followed by Epilepsy - suspect - depression and Trephine. Burns the cicatrice binding down a nerve. Fractures in the arm have been the cause involving the musculo spiral nerve. These cases have been cured

by releasing the nerve. When there is a distinct aura - arising from one point, cure has been given by cutting the nerve - Bands - blisters - leeches above the point of the commencing aura have been in the majority of cases useless.

Medicinal. The moment you mention Epilepsy the mind of the practicioner is associated with Bromide. Undoubtedly the Bromides stand 1st in efficacy So many cases have been treated by them and failed they have fallen into disrepute - All depends on the manner

of use. An alkali given before meals and after meals produce two entirely different effects. To give an alkaline salt after meals to produce a further outflow of Gastric juice is absurd. In using the Bromides they must be used rationally. Occasionally silver salts have been used with good effect - but in time they turn the skin to a dirty brown or yellowish green. Copper salts have been abandoned. Zinc salts (Oxide) do good in mild cases. Belladonna long used is reported to have cured (?) In those of plethoric nature

Ergot is beneficial combined with Bromide salts, Calabar Bean Lobelia Valerian Hyoscyamus and Camphor with a host of others of minor importance are recommended. Cases with prodromes are more easily treated and give a more favorable prognosis. Nitrate of Amyl is of special value in keeping off an attack a few hours but it returns unless the usual remedy is given. The objections to the use of these drops which are usually prepared to break on the handkerchief - is that it is necessary to have them

fresh unless the evaporate and
lose their efficacy - carried in
a box in the pocket - a certain
amount of lime is necessary
to get them ready to inhale
The excitement of the patient,
the short time of the aura
in many cases render them
useless - Nitroglycerine has
a more lasting effect - and
in periodical attacks - benefit
has been derived - H.C.N. Hydro
cyanic acid is still better -
administered with the
Bromide than either of the
foregoing. During the paroxysm
it is best - to do nothing. Quiet

the jaws of the friends of the patient. In the clonic stage a piece of rubber, board or cork placed between the teeth prevents laceration of the tongue. Let the patient be in a prone position. Those cases having a fatty heart or aneurism the violence of the convulsions may cause a rupture - administer an anaesthetic for a few moments. To cure a case - rare. To alleviate a case - frequent. The patient must take his medicine with the regularity of clock work and continue it for months - years. No physician

should discontinue for treatment under 12 months. The treatment I have adopted in the Nervous Department of the Dispensary is as follows. Instruct him as to Hygiene - Examine for cicatrices malformations &c. Learn his family history and all connected with the case. Then give your remedy. There are four salts of Bromide.

Bromide Potassium Soluble in water 1 to 1½ Dose V grs to ʒi
" " Sodium. Unofficial V grs to ʒi
" " Lithium Unofficial V grs to ʒi
" " Ammonium V grs to ʒi
" " Calcium don't use.

Antagonists + Incompatibles are

Acids, Acidulous salts and Metallic salts are incompatible with Bromides of Ammonium and Potassium and nitrous ether Physiologically. Cold, Digitalis. Belladonna. Ergot - etc. Gastric catarrh is one of the evil effects of their long continued use. The commencing dose of any of these salts should be modified according to the age of the patient. Commence with ℥ß grs of the Potassium salt three times a day.

℞. Brom. Potassium ʒß
Tr. Valerian ℥ii
Mx Aqua Cinnamon ℥iii
Sig. ℥ii t.d. after meals.

Every 3 days increase the dose 5 grs until symptoms of Bromism appear. Then the Physician has two courses to pursue - First to abandon the remedy for a time or to continue and try to abort it. In this way he may add Fowlers solution 5 gtts to each dose or Coffee which has been referred to. I prefer the other way - When Bromism symptoms appear abandon the Potassium and press on with the Sodium. When the symptoms disappear altogether - keep up till Bromism is fully developed. Then drop the Bromides and use Iodin

of Zinc and Belladonna. Oxide of Zinc is not soluble in water but freely so in HCl.

℞. Oxide of Zinc ʒr ℈i
Tr. Belladonna ʒiiss
Tr. Hyoscyamus ʒi
M. Aqua ʒiii
Sig. ʒi l.d. Shake before ersing. Bromism diminishing commence again with Potassium and carry on until you have found the maximum amount he can stand and keep there for a number of months. I have not much faith in Lithia and Ammonium salts. If necessary to Bromize a pat-

vent - quickly use both Sodium
& Potassium alternately

℞. No 1

Brom Potass Zir

Tr. Valerian Zi

Tr. Hyoscyamus Zss

Aqua - Züss

Mx. Sig Zü as directed

℞. No 2

Brom Sodium Züss

Tr. Hyoscyamus Zss

Bromide of Iron

Mx Aqua Züss

Sig. Zü as directed.

Use Every 4 hours alternately

No 1 at 9 a.m No 2 at - 1. P.M.

No 1 at - 5 P.M No 2 at - 9. P.M Etc.

Night attacks are best treated
with Chloral Hydrate. On looking
over the whole field the
treatment is unsatisfactory.
We have no Specific. Hygiene
at all times, as Physiology
and Pathology advance so
will Materia Medica and
Therapeutics. Every Physician
should watch carefully his
cases. The humblest; by care-
ful attention to details, to day
unknown tomorrow may be
found his name heralded
throughout the Medical
world. We may be on the
verge of a great discovery

This is an age of Progress
The discovery of Cocaine shows
us the possibilities of a
blindend of Medicine.
This Thesis may be valuable
in March and worthless
in April

Eugene M. Hill

Kaleidoscope

[illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible]
[illegible] [

review of all that has been said, or written we find ourselves no nearer the truth than were our fore-fathers. The mysteries that lie beyond are yet to be sought for, and the true nature of affairs yet to be discovered.

In relation to this subject pathology has been in a continued state of revolution and instability. Theories have risen and sunk again in a continued and rapid series of successions;

each has had its hour to "strut upon the stage" and its votaries to yield it faith, but the stream of time has hitherto overturned all these insubstantial, though often ingeniously and highly wrought fabrics.

Haematuria is an affection of the kidneys characterized by a dark colored urine containing a certain amount of quantity of blood. This hemorrhage like all others may be active or passive. As it is a

symptom and not a disease, it has no morbid anatomy, and its causes will at all times constitute its pathology.

As the blood voided by the urine may originate at any point of the urinary tract from the malpighian unit to the orifice of the urethra, I shall first state some of the modes of differentiation; 1st. Urethral hemorrhages are independent of micturition as shown by pure blood being forced out by the urine;

2nd. If blood follows micturition we should at once suspect the seat of the disease to be in the bladder. — Clots following micturition suggests cystic disease. Lastly and the most important of all to the physician is renal hemorrhages. This we know may take place from the pelvis of the kidney, & which is the most important & frequent, it may occur also from the calices & malpighian tufts. The diagnosis of this affection is comparatively

easy. The urine is of a high specific gravity, and discolored throughout, which is not the case in urethral, or cystic disease. Further when we find by microscopic examination, and spectral analysis blood globules, albumen, granular and hyaline casts to be present, we may safely say that renal disease is the cause of the haematuria.

The causes may be local, or general. As stated above active, or passive

hyperaemia may constitute a cause, also may nephritis, infarction, pyaemic abscess, pyelitis, stone in the kidney or in the pelvis of the kidney & certain drugs, such as, turpentine, cantharides, garlic and other similar substances.

In the bladder the aetiology may be traced to a stone, cystitis, malignant growths, polypi, specific and non-specific ulcers, dilatation and varicosity of the vesical veins.

The urethral causes are

numerous, viz: urethritis both specific and non-specific in nature, chordee, fracture of the penis, chancre, chancroids, polypus, phimosis and lastly caustic injections.

Among the general causes of Haematuria may be mentioned the acute infectious diseases, Malarial fever constitutes a prominent cause, so does scurvy and a condition known as haemophilia, or bleeder.

There is an epidemic or periodic form of Haematuria

supposed by many to be due to a certain miasmic, of which, I will speak later. Many are they who hold that this affection is entirely of a malarial origin. This view seems plausible to the observer at the first glance, as a large number of cases are found where malarial fevers are quite prevalent, yet we find many people, about from this same disease, not comparatively good health, who have been apparently free from all malarial taint. And again

we find that [illegible] of such cases yield to the [illegible]. Now are these questions to be answered? It may be that repeated and frequent attacks of malarial fever [illegible] the kidney [illegible] such a high degree of congestion, as to bring about a change in the walls of the renal vessels, and thus renders them no longer able to subserve the useful purpose for which they were intended.

We have been told that

one of the first phenomena noticed is inflammation is this change, or impairment in function of the capillary vessel walls. So when in addition to blood globules, we find that there are present granular and hyaline tube casts, we may safely say, that such changes have taken place. If the above statements be true, we plainly see that a predisposition to the disease may be set up, and that periodical attacks of Haematuria may be brought

on by whatever is capable of increasing the general momentum of the circulation, and especially by mechanical agitation of the urinary tract. It is frequently brought on by active Exercise.

Whatever view may be adopted ultimately, says Bristowe, certain facts stand out clearly, viz: 1st. The dependence of the paroxysm on a calculous state, 2nd, The intense congestion of the kidney, which attends the paroxysm, 3rd The relief of both congestion and paroxysm effected by copious discharge of blood

with the existence of all these conditions of any Structural disease of the Kidney.

From personal experience and observation I have known cases to occur where there were none of the above symptoms present. The patient on retiring at night apparently in good health would find on rising next morning his urine to be of a dark smoky color, and loaded with blood clots - being alarmed at such a case he at once sought medical aid and advice. The symptoms found by microscopical exam-

irritation, the urine to contain a large amount of blood corpuscles, granular and hyaline tube casts, and by the application of heat and nitric acid found a large per cent of albumen, which was a necessary consequence. The result of the examination enabled the physician to say at once, that the hemorrhage was renal in origin.

There is one condition of the urine which simulates very closely Hæmaturia, and which can be differentiated from it only by means of the

use of the microscope. This condition is called False Haematuria and contains only haemoglobin, the microscope fails to detect any corpuscular elements in the urine. This condition is also called haemoglobiaemia, haematuria, and intermittent haematuria.

The haemoglobin is set free in one of two ways; either the extravasated corpuscles disintegrate, or the haemoglobin makes its exit without impairment, or rupture of the vessel walls. The haemoglobin, being once set free in the blood, is

all over eliminated by the
kidneys We have been told, that
certain poisons, fevers, or extreme
to cold and damp may be the
cause of this condition.

Endemic haematuria has been
applied to that form of haema-
turia occurring in tropical, semi-
tropic, as around the Cape of
Good Hope, Brazil and Egypt.

In 1857 Bilharz discovered
the parasite which he called
"Distoma Haematobium" to which
name Cobbold substituted the words
"Bilharzia haematobia" in honor of
the discoverer. Harley made the
same discovery in 1864 but failed

to find living embryos in the urine. By additional researches made by Ginsinger, Lonsino and many others of equal prominence more light was thrown on the subject, and more strength was added to the discovery and views of Bilhaz and Cobbold.

The parasite, "distoma Haematobium", of Bilhaz, is said to be more than half an inch in length, and found especially in the portal system and in the vessels of the bladder and mesentery. The urine is said to contain the living embryos, which moves about with great rapidity by

means of the long vibrating cilia with which they are covered. The supposition is that the larvae of the parasite is contained in impure drinking water, and that this is the medium by which it is taken in the system. Cobbold is of the opinion that the infection is brought about by swallowing fresh water mollusks, which contain the larvae in their encysted, or hydatid condition. This view has not met the approbation of many.

The diagnosis of this form of Haematuria depends upon the discovery of the ova, or frus-

bugs in the urine, or feces.
By exciting inflammation and acting as a continual source of irritation to the kidney they cause severe pain about the lumbar region and bladder.
The treatment should be directed to the destruction of the parasite in the system.
For this purpose no remedy has been discovered by the profession. Harley recommends the oil of turpentine, male fern and chloroform to expel the ova from the urinary tract. ℞ Olei Terebinthinæ, Aspidii āā ℥ xv. Chloroformi ℥ v ft.

Sig: This quantity daily and a solution of Bicarbonate Potassii to relieve renal irritation. He also recommends the injection of Iodide of Potash in the bladder, Worm wood & Male fern in a weak solution.

Symptoms of Haematuria:-

This, like many other diseases, has no regular train, or series of symptoms. Sometimes immediately after exposure to cold and wet the patient will complain of chilliness and uneasiness across the loins, the former passing into a sense of extreme cold, the

taller into a severe aching sensation. With such symptoms there may be nausea, vomiting, severe rigors and a retraction of the left testicle. This does not hold good in all cases. I have known cases to come on without the slightest degree of discomfort, but after it has existed for some length of time and has become chronic there is a sense of discomfort about the kidney nearly all the time, though not sufficient to cause the patient to take to bed. This patient colored urine when allowed to stand in

a vessel deposits a large quantity of sediment into a uniform paste-like mass, leaving the super-natant urine perfectly clear. The urine is of a high specific gravity and is generally acid in reaction.

Nearly all those who are subjects of this affection are pale, anaemic and dejected.

Diagnosis. The presence of albumen by the usual test. The characteristic smoky color of the urine. By submitting a specimen to microscopic examination you will almost always find blood corpuscles.

The corpuscles may be distinct sometimes. Globular and often crenated. They may be colorless having imparted their pigment to the liquid in which they float. This latter condition may be detected by the use of the Spectroscope or by the Guaiacum test. The peculiar action of the urine upon the blood corpuscles may cause them to contract and appear abnormally small.

Prognosis. Much depends upon the cause. The endemic form is hardly ever the

direct cause of death, but its remaining of this form will eventually lead to profound anaemia. It may produce such structural changes in the kidneys as to give rise to chronic albuminuria and finally end in death.

Treatment. The uncertainty which exists [illegible]

Thesis on
Typho Malarial Fever.
by
J. A. Anderson

Typho Malarial Fever

Wherever humanity is found, there also will be sickness, disease and death; caused either from some violation of the laws of health, or from neglect of those inviolable hygienic rule that is given us by Providence, the violation of which will as surely bring on their evil consequences; thus in the case of the fever exposure to the septic germs will cause typhoid and its attending intestinal ulcerations. So also the Miasm of Malarious districts give rise to the several forms of that remedy, thus it is with our subject at hand, it is a disease, endemic and only found in Malarious districts having the symptoms

of Typhoid and Malaria worked in a greater or less degree, a hybrid in which the high temperature of the one, is combined with decline and exacerbations of the other.

This form of fever was first brought into notice during the late civil war under the name of the "Chickahominy Fever" said to have been brought in by dietetic deficiency and crowding, perhaps these being the predisposing causes prepared the system of the unfortunates, for the reception and development of the septic germs, though even it surely flourishes without these

adjunct. It [illegible] found [illegible]
malaria is absent, in the low
wet district that is badly drain
ed or not at all, where the
streams overflow their banks and
drainage being deficient, so that
concurrent with vegetable decom
position the Miasm is generated,
or which amounts to the same
thing badly conducted hygienic
regulations in our cities, emanations
from Sewers and filth, &c appears
to be a no bed for development of
Malaria germs, If our City Fathers
would take the precaution to
have a good system of Sewerage
and see to it that all garbage
and filth was removed so that

decomposition could not take place
the [illegible] would not be [illegible]
ted, So also if good drainage
and sunlight could be made
to bear on the marshy and swamp
y districts along our streams—
would it not tell materially
on the health of the inhabi
tants of these regions?
Is it contagious, evidently not,
there may be only one member
of a family afflicted or a par
ticular part of a town affected
without those coming in con
tact with it feeling any
bad effects—I recall to mind our
instance that will bear this
out, three household in the

same part of a village was affected, two or more members of each family was taken almost simultaneously, the fever ran its course without any others of the families or immediate neighbors being affected thought they were in immediate contact with the fever. We then conclude that it depends on a germ, or a combination of germs, and evidently if the Malarial Miasm predominates there will be a preponderation of the symptoms that characterize that disease, or vice versa if the Septic germ of Typhoid is in the ascendency, the symptoms will [illegible]

resemble those of that effect.
The symptoms thus varying as the case is complicated, renders it difficult to lay down any distinctive feature to a particular case, but each case must studied and treated on its own merits.
Yet to render it more easily studied, and for clearer description it been divided into two classes, 1° those in which Malaria predominates, and 2° those in which the Typhoid symptoms is most prominent.
In the first class, the following symptoms is usually observed.

The patient may be taken without any warning of approaching danger, or else, have a slight headache, is feeling bad, with malaise and a dull case kind of depression, lasting for a few days. The attack is then ushered in by a chill, with all the leading phenomena, after which fever sets in, varying in intensity according to amount of poison that is in the system, often it reaches to the high and dangerous point of 103°-104° F.- for a few days the attack resembles Remittent fever with the exception that the remission is not as well defined.- There also will be noticed the dominant tenderness over the region

of the Ileo Cecal valve and gastric disturbance. This symptom is one of the differential diagnostic features from Remittent fever. The skin may present a clammy appearance attended with a icteroid hue, the region about the eye becomes dark. Diarrhoea may complicate the case when so the stools present no diagnostic marks, — The tongue may be coated with a foul yellowish coat, or may only present a greater degree of redness than is normal varying with the intensity of the attack — During the whole attack there will be a tenderness sometimes well marked, then comes a decline and exacerbation, — Pulmonary

trouble and suppuration of the cervical glands may occur which must be noted and treated according as may be necessary.

Scurvy may possibly have existed with this fever in ill fed Soldiers and Sailors but surely in our country where there is much vegetable diet, we can exclude it from our list of complications in civil practice. When it does occur there is present the swollen tongue & gums characteristic of this trouble. In the second class of symptoms, the patient, for a week or ten days before the attack came on, will feel tired, great lassitude is present as compared with former running

through the back and [illegible], head ache sometimes in a severe form, will be noticed, the inaugurative chill will then come on - this, as does the prodromic symptoms, vary, sometimes it is ill-defined, or altogether absent, the fever coming on after these phenomena, varies in intensity during the first week, usually to attain its maximum about the middle of the second,

The pulse is quick and bounding at first, then as the patient grows worse and feebler it becomes small and compressible. The tongue is at first a little swollen and injected with a whitish coating, but as the symptoms

of Typhoid gain the ascendency
it will become dry and brown,
or, perhaps fissures will make their
appearance beneath this Marbled
Mucous membrane. Diarrhoea may
appear at any time during the
attack, but is not as serious
a complication, or is it seen
with as great a degree of inten
sity as in the typical Typhoid
The rose colored spots may be absent
altogether or if present is not
as characteristic as in the typical
If the attack takes on a grave form
the patient will sink into a ty
phoid condition of low muttering
delirium, is comitose can be rous
ed when desired but when left to

[illegible] immediately returns to
his former state, he may survive
thus if his powers of life is strong.
but more often the disease will
carry its victim off.—
If the attack ends in restoration
to health, the tongue clears gastric
and intestinal troubles subside,
though diarrhoea may continue
for some time the pulse becomes
slower temperature subsides, and
convalescence is established which
may last for a long time.
The changes that take place in
the blood will be found not
to differ materially from those
found in Typhoid and Malaria
with the exception that there is

found free pigment [illegible] that
is absent in the others.
As in Malaria so in this we have
the Liver and Spleen increased in
size with perhaps a deposit
of pigment in their texture this
is not a very prominent sign.
or is pathognomonic of this [illegible]
The changes found in the Heart and
Lungs is the same as those in the
Typhoid parent.
The intestinal are very nearly the
same as found in the Typhoid
during the first weeks of the of
the disease except we cannot de-
vide the change into distinct Sta-
ges, and the deposit of pigment
in the [illegible] which is found

crowning the swollen follicles.—
in the later stages there is a dis-
tinct elevation of the Mucous
membrane—the follicles being sharply
raised above this, especially in
region of Pyers patches, these are
present a ragged appearance, the
top is larger than the base gi-
ving rise to a restriction at the base
which is greater than in Typhoid
fever,—these changes has not a
distinct periodicity, but is so
mingled that it is impossible
to say what changes take place
at a certain period of the mal-
edy. Intestinal perforation and
consequent peritonitis is rarely
seen, the changes in the [illegible]

entary glands, are simply a little inflamed, hence we see that this fever resembles typhoid very closely, yet differs from it in the decline and exacerbation of its febrile movement and in the changes in the intestinal glands as noted above, in Malaria we do not find the intestinal changes or the typhoid condition that characterizes its latter stages. Now after this imperfect description of so important a subject, interesting and important to me because nearly every Fall some of my friends are carried off by it, I will attempt to give an account of this malady as it appears with us.

On either side of the village a slug-
gish creek runs. The water of both
are impeded by logs and drift wood
so that with every freshet, the
"bottom lands" are inundated, and
the drainage not being sufficient
gives rise to decomposition and Ma-
laria. The prodromic stage
lasts from a few days to two weeks
during which there is dullness with
a heavy feeling about the abdomen
and headache, during which, also
the tongue is slightly coated the
tip and edges being red; the pulse
is a little accelerated, and the temper-
ature slightly above normal, this
continuing until the attack is
fully developed when it is

ushered in by a chill, though this may be absent,—

The fever rises to 100° 103° rarely going above this, except in well marked cases, the pulse varies from 85–100 the fever generally falls 1° 2° in the morning, only to reach the same point that it had before attained,

the tongue is coated heavily with a thick heavy fur which gives rise to the bad taste, so often complained of. These symptoms usually remain about the same for about two and a half to three weeks when there will be a change for the better or worse, If for the better

the patient slowly regains his
now wasted strength, the fever
diminishes, tongue gradually
clears off and convalescence is
established, which lasts a long
while before the patient is en
tirely recovered. it is during this
stage that close attention must
be given, for there is a great ten
dency to relapse, which in most
cases prove fatal, on account of
the wasted constitution and lost
strength there is no power left
to fight the force of the disease.
If instead of this the fever is to
continue, the patient rapidly
becomes worse, the strength is
weaker and he passes into a

Comitive condition with perhaps low muttering delirium.
The tongue takes on a thick brownish coating which is occasionally fissured, the regions around the eyes become dark. tympanite is present though the rose spots are rarely seen. Diarrhoea is not always present though there is a tendency in that direction. On the whole, it appears to be a fight of the constitution against the disease, all the Physician can do is to guide it, for I have seen the most strenuous efforts put forth with use of large doses of Quinine and sponges to allay the fever

Veratrum and Aconite to sustain the failing heart, yet the disease heed them not, carrying its victim off yet in strong constitutions I have seen the patient recover the fever leaving him helpless his strenght being gone.

The most important treatment when practicable is to move the patient from the Malarious district to a high and healthy location.

Quinine as an antipyretic give about one or one and a half grains a hour during febrile action

Iodide of Iron combined with Cod Liver oil for enlargement of liver & Spleen is recommended which

I suppose is good though we never seen it used.
For constipation Alloes and Rhen bark is good when they will produce the desired action. When they fail as I've seen, then Calomel is indicated, though the practice of giving this drug in every case at the prodromic stage, is bad practice, it appears to me. In severe headache, and Neuralgic pains Opium is indicated Alcoholic Stimulants, is indicated in weakness of first sound of heart. In general we give quinine watching symptoms and treating complications as they arise.
One among the most important

acquisitions to the sick room is good, sensible warning. A nurse that can soothe the patient, who can prepare a diet to tempt the appetite, which is always wanting in the febrile excitement. And a strong hand to curb the appetite, which is always exorbitant in convalescence, is indispensable.—

Respectfully submitted.

J. A. Anderson

Thesis on Typhloenteritis.

J. Wm. DeArmon.

Typhloentritis

Typhloentritis is an inflammation of the walls of the caecum and the vermaform appendix characterized by a circumscribed swelling accompanied with redness, heat, lancinating pains and occasionally leading to perforative ulceration. This disease is of so unfrequent occurrence that no doubt it will be a matter of surprise to an observer that a student would attempt a thesis on such a subject. I have a two fold object in writing upon this subject. One because I am a candidate summer and [illegible] the other is to [illegible]

the disease.

The disease is as rare as the cancer of most practicioners.

It is all important that physicians should become perfectly familiar with this disease on account of its rare occurrence and consequent danger if mistreated

I heard a physician of fifteen years say that he had seen but two cases of this disease. Another physician of ten years practice said that he had not seen a single case; and still another said that he had a case and treated it with strong

purgatives and the patient would have died had the treatment been continued. I have no doubt but what there are many more who know very little about this disease.

The Caecum being the most dilated part of the tube would make it appear to a student, who is not well grounded in the anatomical, physiological, and pathological characters, that the disease would occure more frequent.

This disease which effects a portion of the large intestines, called the Caecum, is situated in the right inguinal region. It is the ending of the small intestine.

It measures about two and a half inches both in its vertical and transverse diameters and is at times almost surrounded by peritoneum. It is behind the anterior abdominal wall and is retained in position by the peritoneum. Attached to its lower and back part is the appendix vermaformis — a long worm shaped tube. It is from three to six inches in length, and its average diameter is about equal to that of a goose quill.

Typhloentritis might come under the head of intestinal ulcerations, since the inflammation of the mucosa is commonly accompanied

by inoculation. Sometimes ulceration from the inflammation of the coats of the Cæcum or of the tissue surrounding it takes place without the usual phenomena of Typhloenteritis.

This disease may be divided into the acute, subacute, and chronic. The subacute gives rise to local symptoms which are the same in character as those of the acute, but less in distinction. The inflammation may run on into the chronic form. Ulcers, stricture, & Syphilitic tumor remains, after copious discharges from the bowels, on account of the inflicted dis-

state of the intestinal walls.

The causes of Typloentritis are numerous. It may be caused by the detention of faecal matter in the Caecum, from the presence of irritating matter received in the ingesta, or it may arise from the chemical change in the intestines. Foreign bodies, impaction of faecal matter, bilious intestinal concretions, and masses of lumbrici sometimes cause it. It may be due to constipation, colds, and long rides. The anatomical position of the organ as a receptical for the small intestines, its great capacity when filled, its

magnificent arrangment of muscular elements, and its numerous folds of mucous membrane when empty may cause syphilis.

This disease is considered to be in its most dangerous form when it is connected with the perforation of the vermaform appendix — an occurrence mainly in early life, and more frequently in males than females.

The symptoms of this disease are quite similar in charater to those of some other diseases. There is a circumscribed swelling of the caecum, heat lancinating pains, tenderness to touch, and some fever. [illegible]

are sometimes of a dull, heavy, and dragging sensation. There may be in some cases rigors. Sickness is sometimes complained of. Constipation is sometimes present during the first part of the disease. Not unfrequently does diarrhoea alternate with constipation. On account of the close relation of some important nerves and veins of the caecum, this disease is apt to produce painful neuralgic symptoms and oedema of right lower extremity. Vomiting and diarrhoea are at times present. In severe cases the symptoms are increased in severity. There will be decided fever, vomiting

first of the contents of the stomach, then of the duodenum with bilious matter, and then of impaction present, of matters which have the odor of faeces. The decubitus and sitting posture are characteristic - the body is turned somewhat to the right and flexed to relax the muscles on the right lateral plane. It sets in with general malaise, loss of appetite, and a coated tongue. One of the best diagnostic points is to see the thigh drawn upwards flexed towards the abdomen -

There will be dullness on percussion over the caecum. The patient often has quick and shallow respiratory acts, shrunken and anxious expression, and sometimes hiccough.

Abscesses are formed in many cases at first from perforation of the bowel and produces peritonitis. It is also to be remembered that the part of the bowel is a common seat of inflammation of abscesses from other causes: inflammation of an ovary and connective tissue in its neighborhood, psoas abscess from cause of the spine, renal abscess.

This disease occurs more in males than females: thus ten cases and

ized by Bamberger eight were males and two were females; eight were below thirty years of age, two above thirty. This shows that the majority of cases occurred in early life.

Thirty two cases collected by Dr. Cleiffe, twenty nine were males and three females: five were under ten, thirteen between ten and twenty, seven between twenty and forty, and seven between forty and sixty. This again shows that the disease occurs more frequently in younger life.

The duration of the disease varies from two weeks to twenty one days.

Doubt and apprehension in respect

to the diagnosis will be removed as the disease advances. It is to be distinguished from psoas abscess in Pot's disease, abscess with caries of the pelvic bones, cellulitis, abscess in the abdominal walls and disease of the hip joint.

One differential diagnostic point is that Syphilitic tumors are more superficial than Perityphlitis.

The prognosis in the majority of cases is favorable. Statistics show seventy per cent of recoveries. Dr. Flint says in now of the cases of acute Caecitis which have fallen under his observation, has perforation of the small intestine taken place and

the termination in every instance has been favorble.

The treatment as is said in the beginning is of great importance. Give patient mild laxatives: castor oil with flax seed tea will have the advantage of being more emmolent than the most of laxatives, "enemas. Moderate doses of castor oil by the mouth at the onset of the disease is good. Applications of leeches over the inflamed part is good. Bread poultices, flax-seed, slippery elm bark to which if there be much pain add laudanum. The best and safest laxative

is sulphate of magnesia. There is generally not much fever, but if there is and you have tenderness upon pressure no purgatives should be given. It is in this condition opium should be used and morphia hypodermically. It is better to combine atropia with the morphia for its therapeutical power. The patient should be kept well under its influence. Give one eighth of a grain of morphia to $\frac{1}{240}$ of a grain of atropia. If there be any objection to the hypodermic method give tinct. of opium by rectal injection.

If the rectal organs are intolerant then give tincture of opium by the stomach. As soon as the great tenderness subsides give saline laxatives in a cautious manner. If vomiting be persistant it may be relieved by milk and lime water, hydrochloric acid, carbolic acid, pellets of ice, and iced champagne. Absolute rest is of great importance. The patient should not be allowed to stir about for sometime afterwards.

Case I

Mr. A — aged sixty years com
plained of great pain and sore
ness in right inguinal region
on May 4th 1854. His pulse
was 84, respiration 25, temper
ature 88⅔. He had taken a
long buggy ride a few days
previous. He came back very
hoarse and had a bad cold
His Caecum was inflamed, a
bout two inches externally
shown. I gave him a dose
of castor oil and opium and
sent for my preceptor — J. R. Irwin
a graduate of the University of
Md. He was then put on aloin
and ipicac each half grain

and extract of belladonna one fourth of a grain to be taken every fourth hour, unless his eyes got dimmed, if so lengthen the time of taken this medicine. At the same time directed bread poultice to the affected bowel and salt water injections per rectum, if necessary

May 5th. I saw him again. His pulse, respiration, and temperature were some above normal. Pain and soreness reduced and was resting better. I gave him small doses of calomel and chlorate of potassium every four

hours, and left directions to keep up the poultices.

May 10th, I saw him again. He was a great deal better. Swelling had gone down, pain and soreness much diminished. I gave him four blue pills to take one every two hours, and that failed to move his bowels in twelve hours to give him warm water injections per rectum.

May 13th, He was still improving. I gave him nux vomica twelve drops and quinine in tonic doses three times per day just before eating.

May 17th. I visited him again

and found him gratly impir-
ed. I bid the case adieu with
the following directions: take
buchorn cordial half tea spoon
full night and morning and
the nux vomica as previously
prescribed for a few days and
to be very careful about his diet
and exercise for several days.

J. Mc. Dermon
Charlotte
N. C.

Thesis for 1885-86.

A Thesis on Intermittent Fever

by

Jno. Eugene D. Laughlin

of

North Carolina.

Intermittent Fever.

Definition.- This is a periodical affection, characterized by the occurrence, in regular succession of a cold, hot & sweating stage, followed by an intermission, during which there is a complete absence of febrile movement which is the most characteristic feature of this disease. It receives its name from the character of its paroxysms which occur at stated times & with a degree of regularity which is truly remarkable. It has a number of local names given it in the different localities in which

it prevails, such as: "Panama fever", "swamp fever" & "marshmiasm. In the writer's locality it is known to the laity as "the chills"

Causation.— When we carefully consider this fever, we find that it presents many points of difference as compared with the continued fevers. It is much easier controlled by known remedies than the latter, & differs also in regard to its causation, duration, clinical history & sequels.

The great agent in the production of this disease is a vegetable organism known as malaria.

The conditions which favor the production of this bacillus malariae exist, in this country, all along the Gulf & Atlantic coasts, extending as far north as the New England states; it also prevails along many of the rivers east of the Alleghany mountains, throughout the great scope of country drained by the Mississippi and its tributaries & probably, along the Pacific coast & western rivers.

There seems to be no doubt that this disease is caused by the entrance, into the body, of a vegetable organism, known as the bacillus malariae, which has been found

in the soil and air, but is said not to flourish in the water although it evidently does in the fluids of the body. Malaria is very abundant in and around marshes, those that are brackish being the more favorable to its production. It is the product of, or dependent upon the decomposition of vegetable matter.

Heat and moisture are necessary to its development. A subsoil of clay or limestone favors its production by holding the moisture & keeping the soil damp. Its production requires a temperature not below 58° or 60° Fahrenheit. It is

more abundant after an overflow or when a dry period follows a wet one. The overflow deposits a sediment upon the vegetable growths of the lowlands & of, when the water subsides, it leaves these growths, covered in mud, to undergo decomposition and, thereby, furnish an abundant crop of malaria to affect the inhabitants of these regions. The fact that it is endemic in some regions proves it to have a telluric origin.

Its specific gravity keeps it near the ground & persons sleeping on the ground floor of a dwelling may contract it, while those sleeping in

an upper story of the same building escape. Malaria is carried by the wind and eminent authors claim that it can be contracted by sleeping with the windows open which front toward a swamp, while, if these be closed, other windows of the same room may be left open with impunity. Malaria is no respecter of persons; it attacks alike the rich & poor, old & young. Who knows but what Solomon in all his glory was shaken up by it? It is more active during the night than in daylight, hence its evils may be avoided by avoiding exposure to night air, in many

instances. In the writer's section of country, (Piedmont N. C.), intermittent fever prevails from about the first of June until the first or middle of November. It prevails more especially during the months of August & September. Probably its great prevalence during these months can be accounted for, to a certain extent, by the breaking of fallow ground in preparing for the seeding of the wheat crop. It has been observed by many physicians that malaria is more prevalent after the turning up of the soil, & it is reasonable to suppose that the decomposition of the rank growths of vegetation,

turned under in this way, contribute to its production.

Intermittent fever attacks persons regardless of age or sex. It probably affects males oftener than females on account of their being subjected to a greater amount of exposure.

The negro is not nearly so subject to intermittent fever as the white man.

+ It is well known, to every southern man, that the person of a negro exhales an odor peculiar to his race. Some persons believe that it neutralizes the action of malaria to a very great extent. Whether this be possible or not, it is a well established fact, that certain vegetable

+ Please do not understand that I indorse the idea.

growths possess the power of absorbing malaria or of preventing its action. Its absence in the Dismal Swamp is accredited to the presence of the cypress-tree. The growth of the eucalyptus globulus & of the common sunflower of our gardens is said to prevent the production of, or neutralize the action of malaria.

Many persons believe that the common pine tree of our forests possesses this power to a limited degree. Observation shows that persons, whose dwellings are separated from marshes and water courses by a dense growth of pine timber, are comparatively free from malarial affections, notwithstanding

the elevation of their dwellings may be inconsiderable. Elevation affects malaria: it travels up ravines & persons living in them, although it may be at some distance from the water course to which they lead, are affected by it, while others, living on high ~~ffs~~ in its immediate neighborhood escape its evil effects. I have known persons who lived on high & dry ridges which were absolutely free from malarial influences, to be attacked by intermittent fever after spending a single night with friends or relatives who lived in the infected regions.

Clinical History.— Intermittent fever has no definite period of incubation.

It may manifest itself early after exposure or after a great length of time, probably months, has elapsed. Persons who have once had this disease are more susceptible to it than those who have never experienced it. There is no reproduction of the special cause of this disease in the body, therefore, it is not communicable from one person to another. Exposure to cold & fatigue render the system more favorable to the reception of the germs of this disease. Other causes also act as auxiliaries in its production. An attack may occur with or without premonitions.

A paroxysm is ushered in by a cold,

followed by a hot & completed by a sweating stage.

Cold stage.— As this stage comes on, the patient feels weary, wretched & ill. He is tormented by thirst & gapes, stretches & sighs frequently. He experiences cold sensations running all over his body which cause him to shudder and shake so that his teeth can often be heard to chatter. The hairs bristle all over the patients body, his head aches, his back aches, his limbs ache, and it is often difficult to find any part of his body that does not ache. The end of his nose becomes cold, so do the fingers & there is often a blue semicircle

beneath each nail and eye. The patient, thoroughly wretched by this time, seek the fire if there be any at hand, if not, he goes to bed and covers himself up, but all to little purpose, for the chill will have its shake out regardless of circumstances.

During this stage there is great internal congestion & the surface of the patients body looks pallid and is colder than normal to the touch notwithstanding the clinical thermometer in the mouth or rectum shows an abnormal elevation of the body temperature. The amount and intensity of the shivering varies greatly in different paroxysms. There may

be few and slight shudders or these may be numerous and violent & last for one, two or even three hours. The amount of shivering indicates but little, if at all, the intensity & duration of the fever which is to follow. I have seen others have, and, indeed, have, myself, had paroxysms in which a diagnosis would have been difficult to make, had it not been for the hot and sweating stages.

I have seen these almost imperceptible chills followed by intense fever which lasted for seven, eight and even nine hours. Indeed, I believe that in such cases the

hot stage is usually more prolonged than in the "regular shaker." Such paroxysms are known in the writer's locality as the "dumb chill," and I believe they are almost as common there as the "regular shaker."

In young children convulsions may occur during this stage. The average duration of this stage is from half to three quarters of an hour.

Hot stage.— The change to this stage may be abrupt but is usually gradual. The patient, if he be sitting by the fire, now gets away, or, if he be in bed, kicks the covering off and calls for water, thirst

being a prominent symptom at this time. The spasm of the capillary blood vessels, which existed during the cold stage, is now relieved and the surface of the body receives a large supply of blood which causes it to become flushed and hot. The temperature usually reaches 105° or 106° Fahr. and the pulse is accelerated and bounding. During this stage the extremities cease to ache but the cephalalgia continues; the patient usually vomits and feels most miserable. The urine is scanty, highly colored, acid, contains uric acid and deposits urates on standing.

The urine may be albuminous and occasionally haematuria occurs.

The mind is dull and the ideas confused: the patient suffers from tinnitus aurium, & if on attempting to arise from his couch, experiences vertigo and nausea. This stage may last from two to ten hours or even longer.

Sweating stage.— On the commencement of this stage, perspiration begins to show itself on the forehead and face & gradually appears all over the surface of the body. The pyrexia now begins to abate, the pulse rate diminishes & the thermometer shows a rapid defervescence of temperature

with the disappearance of cephalalgia, thirst, etc. and the patient often obtains refreshing sleep.
The duration of this stage of the paroxysm is three or four hours.

Intermission. — Now occurs a period during which the patient is wholly free from pyrexia; this is called the apyrexial period or intermission.
The intermission is the time from the end of one paroxysm to the beginning of another, while the interval is the time from the beginning of one paroxysm to the beginning of another. The length of the intermission depends upon the type of the

intermittent fever.

Types of Intermittent Fever.— We recognize three types of ordinary or simple intermittent fever. When a paroxysm occurs every day, it is said to be of the quotidian type; when on alternate days, of the tertian and when on the fourth day, including the day of attack or after an interval of about seventy-two hours, it is called quartan.

Any of these types may be double but the tertian is the most liable to prove so. Paroxysms may occur at any hour during the day or night. The quotidian is most likely to occur during the early morning and the paroxysm lasts

longer than in the other forms.
The tertian is most likely to occur between 9 & 12 o'clock A. M. The paroxysms are not so likely to occur during the afternoon. I believe I find them to occur oftener during the evening & night than during the afternoon. The paroxysms of the quartan type are shorter than they are in any of the other types.

The paroxysms of any of these forms may show some irregularity in their recurrence, that is, they may anticipate or postpone.

If no treatment be instituted & they be left to run their courses unmolested, they often anticipate.

When the paroxysms postpone, it indicates that their intensity is becoming modified and there is a tendency toward abatement; while, if they anticipate the reverse is indicated.

In the writers locality the tertian is by far the most common form, the quotidian next & the quartan is so very rare that it is regarded as a great curiosity but one which few persons desire to possess.

Among infants the quotidian type usually prevails.

The condition of the patient during the apyrexial period varies greatly in different cases. Many patients will not take proper care of themselves

but insist on going out and stirring about, while others are more or less prostrated & show great lanquidness & indisposition to exertion.

If this disease be not speedily eradicated, the patient becomes pallid and anaemic & is said to present the malarial cachexia.

During this state of affairs, herpetic eruptions often occur around the mouth; the spleen often becomes greatly enlarged & can sometimes be felt through the abdominal walls, forming the socalled ague cake.

When the system has once been poisoned by malaria, relapses, which occur at tertiary periods usually,

are very liable to take place.

An intermittent may change its form and, after a few paroxysms, become a remittent fever. The writer has suffered from this change on several occasions. Sometimes it occurs in the writer's community in the form of pernicious intermittent fever or the so-called Congestive chill, but as this form is very rare it will receive no attention in this paper.

Complications.— Malarial affections may complicate numerous other affections, a few of which are: Coryza, bronchitis, pneumonia, diarrhoea or dysentery, jaundice, vomiting, etc., when they are said to be latent or masked.

Malaria is not unfrequently the cause of periodical neuralgia which commonly manifests itself in the ophthalmic division of the fifth cranial nerve. This is a most distressing malady. When the attacks occur, they are usually quotidian: the temples throb, there is intense pain in the orbital region with injected conjunctiva & swollen eyelids & the patient experiences general malaise.

The writer had an attack of this affection during the last session of lectures, which, through the kind advice of Prof. Miles, was eradicated by the combined use of quinine & caffeine.

Pathological Characters.— The most prominent anatomical changes are found in the liver & spleen which become enlarged, especially the spleen which usually, if not always, yields to anti-malarial treatment. Changes may take place in the brain & spinal cord & in the intestinal mucous membrane but they seldom reach much prominence.

Prognosis.— The duration of an attack of intermittent fever is exceedingly variable, if it be left to run its course, but has an intrinsic tendency towards recovery. It may terminate sua sponte after a few paroxysms or may not "wear itself out" until

many months have elapsed. It is very liable to relapse which liability lasts for years. I have a friend who contracted intermittent fever in Florida last winter & had three distinct relapses during the summer after returning to his home which is in a community entirely free from malaria.

A relapse may be anticipated in the majority of cases. The simple form of this disease probably never proves fatal per se, but it may become complicated by extremely grave affections. It may lead to the pernicious form which is always to be dreaded, & by the anaemia and general debility which it causes,

if protracted, may lead to phthisis pulmonalis in those who are predisposed to it, by proving an exciting cause.

Diagnosis.— As a general rule, the diagnosis is not difficult to one who has seen a previous attack, & especially if he has experienced one himself.

We can easily determine the type of the intermittent by observing the duration of the intermission. It may be necessary to differentiate this disease from the chills occurring during the course of pulmonary phthisis and in suppuration of internal organs but, fortunately, the anti-malarial treatment will do no harm in said cases if it should be instituted.

Treatment.— Now as we have wearied of an attack of intermittent fever, as we always do in a short time, what are we to do to rid ourselves of it? We rejoice that in this disease we have a sovereign remedy in quinine and other preparations of cinchona which daily observation proves to be an abso... specific. The cinchona preparations are so effective in controlling this disease, that a physician is unpardonable, if he trifle with a patient, by giving him other remedies unless they are rendered necessary by the existence of some idiosyncrasy. All the preparations of

Cinchona possess great anti-periodic powers, but quinia is the surest & most effective. Quinia, to be most effective, should be given in solution.

The best vehicle for its administration, that I have tried, is strong, black coffee. Probably the coffee aids its action to a certain extent as quinia and caffeine act well together. The most pleasant way that it can be taken is in gelatine capsules.

Before prescribing in this way, the solubility of the capsules should be tested by dissolving one in a tumbler-ful of water. As the sulphate of quinia is not freely soluble in water, it can be rendered so by the addition

of a drop of dilute sulphuric acid for each grain of quinine. In what dose should quinia be given? Physicians differ in regard to this. Every practitioner has his favorite dose and mode of administration. Some prefer to give enough at one dose to produce cinchonism and as soon after a paroxysm as possible, while others prefer to administer in smaller doses and repeat until cinchonism is produced. I believe the favorite mode among practitioners in my locality is to give five grain doses and repeat them every five or six hours, until the paroxysms fail to return. this usually proves effective

in a few days. It is claimed that, when enough quinia has been given to produce cinchonism, it is sufficient to prevent the recurrence of another paroxysm; this is probably true, but when this end has been reached, from eight to ten grains per day should be given for two or three weeks, and especially on septenary periods, to prevent a relapse. In case quinia cannot be given by the mouth, it can be administered per rectum or by means of the hypodermic syringe.

Per rectum is an excellent mode of administration when the patient is an infant. When given per rectum, the dose should be somewhat

larger doses when given per mouth.
The most economical way quinia
can be used is by the hypodermic
injection, as it requires less in this
way to produce physiological effects.
When given in this way, there is
danger of the formation of an ab-
scess at the point of injection, but
it may be resorted to, if the rem-
edy cannot be retained when given
by the mouth or rectum. The best
form of cinchona for hypodermic
use is the pure amorphous hy-
drochlorate of quinia, which has
lately been introduced into commerce,
dissolved in an equal weight of
water. It is claimed that this

form does not produce abscesses when used hypodermically. It is claimed that the hypodermic injection of 6 or 8 minims of Magendie's solution will shorten both the cold & hot stage, but this should not be resorted to in ordinary cases. Quinia should not be given during the cold stage.

Probably, the best rule, in ordinary intermittent fever, is to give ten grains at the end of the sweating stage or early in the intermission & repeated two or three hours before the time for the next paroxysm. Quinidia ranks next to quinia as an anti-periodic; it possesses less bitterness and greater solubility. Cinchonia & cinchonidia are

much less effective. Should a case occur in which an idiosyncrasy prevented the use of the preparations of cinchona, other remedies possessing anti-periodic powers may be tried. Probably the next best remedy, after cinchona, is the liquor potassii arsenitis; this may be given in five to eight drop doses three times per day. Iodine is strongly recommended by some authors but Prof. Atkinson, of our College, did not find it very effective in his experiments. It would seem to be especially indicated, in the form of iodide of potassium, in cases complicated by enlargement of the spleen. Lugol's solution is a convenient form in

which to administer it. This may be combined with carbolic acid & four or five drops given every four or five hours. Drachm doses of chloroform given internally at the commencement of a paroxysm are highly recommended. By this treatment the duration and severity of the paroxysms are mitigated and the patient enjoys refreshing sleep from which he awakes without prostration, Salicin, pulocarpin, strychnia, nux vomica, piperine, Chloride of sodium, hydrastia, muriate of ammonia, encalyptus, nitric acid & a number of other remedies may be tried, but the list is too long to allow the merits of each to be discussed here. In many

cases the patient will derive benefit from going to bed & covering up snugly before the hour of the expected paroxysm arrives. During the cold stage external warmth may prove useful, & internal stimulants may be used if the patients stomach will tolerate them.

Pieces of ice & ice water may be allowed during the hot stage; & the body may be sponged with cold or tepid water. During the sweating stage, the patients comfort may be promoted by changing the linen & bedclothes.

Hygiene & Prophylaxis.— This is a disease in which the importance of hygienic rules are well illustrated. Nothing is better established than the fact that

this disease may be avoided by avoiding malarial districts which, as a general rule, can be easily detected by anyone possessing the ordinary powers of observation. In this disease, prophylactic measures will also prove very efficacious. Small doses of quinia, if taken daily, will be found to ward off attacks & prevent relapses. The popular idea that the long continued use of quinia is deleterious to the general health is without foundation. Small doses of this drug may be used daily, for months, with impunity. The efficiency of this drug, as a prophylactic and curative measure, is due to its powers as a germicide.

Hoping that

this little paper will receive the approval of the learned Faculty of Physic in the University School of Medicine and, knowing that when they consider the youth & inexperience of writer, they will be lenient in their criticisms, it is respectfully submitted by their humble and appreciative student.

J. E. McLaughlin,
of
Statesville,
N. C.

313 W. Fayette St.
Baltimore, Md.
Jany. 2nd. 1886.

"Lead Poisoning."

Henry C. Ihle.
Carroll, Balto. Co.
Maryland.

University of Maryland.
Jany. 1st. 1885.

Lead poisoning.

Saturnism or lead poisoning are terms applied, to describe collectively the forms of disease, that are the result of the introduction of "toxic quantities of lead into the human organism.

The poisonous influence that lead exerts over the tissues of the body, produces some of the most remarkable, interesting and varied phenomena, which appear in groups at various stages of progressing lead poisoning. Each group having some characteristic and distinctive symptom belonging to it, which justifies it being considered as a separate form of disease, though apparently but a different degree or manifestation of the poison; and not necessarily following the other in regular order.

I will first attempt to describe in a general way, how the lead enters the body. It is one

of the worst of this agent numerous cases of poisoning having resulted from its introduction into the body, from the mildest type to the most aggravated and fatal form; however since the cause of the poisoning is known, and measures of prevention are being adopted, they are fearing less numerous, or when they occur, are treated before they go on to that dangerous and fatal extent as heretofore; notwithstanding, cases of lead poisoning are more frequent than need be, this is not owing perhaps to the wide and general use of lead in its various forms, but as will be the lack of cleanliness or ordinary precaution and criminal recklessness on the part of those who in their daily avocation come in contact with it, allowing at the same time that a certain proportion of

cases result from accidental introduction of lead into the body. Nearly every form of lead may cause poisoning, no matter how insoluble outside of the body, when taken into the system it seems to be converted into a form fit suitable for its retention and assimilation, then to act as a poison, producing so many strange curious and interesting phenomena.

"How lead is taken into the body." Lead finds its way into the body through various channels; through the respiratory as well as the alimentary tracts, and even may be absorbed by the skin. It is inhaled while breathing in an atmosphere laden with fine particles of lead dust, which is particularly present in the atmosphere of white lead works, where the lead is ground in the dry state; not only laborers but employers

such plans. But horses, dogs cats and even rats and mice have died from its effects; since the introduction of the method of grinding white lead under water, poisoning is not so frequent in these places; lead is certainly taken into the system in this manner, it not only entering the lungs, but some of it mixes with the saliva and is swallowed, again it may be absorbed by the skin, by handling constantly, as in type setters &c. or by the mucous membranes, as in nasal and rectal washes. Poisoning of animals in the vicinity of lead works is not uncommon. This subject was investigated by Dr. Grs. Wilson in 1852 and the results communicated to the Royal Society. He found the herbage in the neighborhood of a lead

-smelting establishment to be impregnated with carbonate of lead, as well the water in a stream used for washing ore. 14 horses and some cows died it was believed from the effects of the lead, examination of the tissues of the animals showed the presence of lead in all, but two cases. The lead found was largely present in the spleen. Instances are been recorded of the death of cows from swallowing the bullet spray scattered in target practice.

„Cases of lead poisoning". Many and most curious are the forms, the manner the articles &c. by which lead has caused poisoning, and often more curious than these the investigations that were instituted to trace the cause, which often prove the poisoning to

be the result of adulteration accidental or purposely of articles of food &c.

"In the West Indies it was found to be owing to the fact that leaden worms were used in the stills employed in the manufacture of rum.

"In Devonshire Eng. it was traced by Sir Geo. Baker to the employment of lead in the construction of the vessels used in making cider; the fluid in these instances acting as a solvent of the metal".

"Again the old name of lead colic, Colica pictonum colic of Poitou arose from the prevalence of colic there caused by the use of a preparation of lead in the manufacture of a cheap wine."

"Lefevre in 1859 by numerous examinations on French-men-of-war, proved colic to be

due to adulterations of wine by sugar of lead."
"In no. 10 of the Medicinische Zeitung (85)
published by the medical society of Prussia,
a case is cited of lead poisoning, caused by
snuff, and upon analysis by Aeckel it
was found to contain 2,0% of lead. Snuff
packed in lead foil always contains lead,
when the package of snuff is first opened
the wrappings often exhibit an incrustation
resembling mould, which is however the carbo-
nate of lead: this packing of snuff and
other tobacco in this foil has so often been
proven to be the medium by which lead
enters the body, that in France Belgium and
Prussia stringent laws have been made pro-
hibiting the packing of tobacco in this foil."
In our own country as well as abroad

many cases of lead poisoning have been caused by the use of leaden pipes in conveying water and of storing it in leaden tanks or cisterns; this has led to investigation by chemists to ascertain the action of different waters on the metal, which I shall not however record here; rain water and other so called soft waters become much more readily impregnated with lead than hard waters, provided these latter contain sulphates and carbonates and not too large a quantity of chlorides and nitrates; the sulphates and carbonates forming a coating for the inside of the tanks and pipes and thereby prevent the further action of the water on the lead ordinary pure drinking water usually contains sulphates in sufficient quantity to be a protection in this way, it is

not safe however to rely on this, without further analysis of the water and certainly it should not be used when it has been standing for a long time in leaden vessels, pipes.

"In England some years ago, the family of the Prince de Joinville were all poisoned by lead, owing as it was found, entirely to the water used, which did not contain one grain of sulphates to the gallon of water."

"In the year 852 English soldiers stationed at Nuwera Ellia in Ceylon, suffered from attacks of what proved to be lead colic, 7/10 of the whole force, sooner or later, in greater or less degree were thus affected, seven cases proving fatal; Dr. Alex Smith traced the cause to the presence of lead in a sample of coarse sugar, distributed among the soldiers

In one particular estate in the Island it was found that plates of lead were attached to some parts of the apparatus employ in making it.

"An epidemic of lead colic in a limited district of Ohio some years ago was traced to the use of cheap earthenware finished with lead glazing. A similar epidemic in New Orleans was traced to lead in soda water; this source was also demonstrated by Prof. Doremus of New York, the syrup tanks and supply pipes of the soda water fountains of that city being made of lead."

"Sir Thomas Watson in his lectures at King's College refers to an obscure case of lead paralysis which was typical, in a woman, the cause after a long time of patient research was traced to a room, in which during the preceding

summer her sons had spent their leisure time in making bird cages which were painted with lead paint, and which room she usually occupied."

Dr. Hammond of New York published a curious instance of lead poisoning which puzzled him for some time; it was in the wife of a proprietor of a beer saloon: there seemed to be no other source for the lead to come from, than the beer pipe, yet the family which was German all drank beer, and the question arose, why should this [illegible] suffer and the others escape. The mystery was solved on learning that it was her habit every morning, when she came down to open the saloon to draw off a couple of glasses first for herself, in accordance with the excise law, they sold no beer on Sunday, so she got the [illegible]

benefit of what lead the beer would dissolve from saturday night to monday morning; it gave her lead colic and afterwards lead palsy.

"Fauqueral des Planches, observed a case where colic was caused by the administration of acetate of lead followed by paralysis and arthralgia.

"In 1866 whole families in one of the counties of New York were poisoned by the use of flour manufactured in a certain mill the owner of which was in the habit of filling the cavities of the mill stones with lead."

"In a case published by Dr. Wilson of London of lead palsy in a portmanteau maker, it was found that the black glazed cloth he used contained much lead."—

Medical literature is full of many such curious instances of lead poisoning, as quoted

in the preceding lines, which are sufficient to illustrate, now varied the media by which lead is taken into the body.

"Articles that may cause poisoning. As already shown lead may be introduced by the use of cheap earthenware, the use of water flowing through or stored in leaden pipes and tanks, wines adulterated with sugar of lead, snuff wrapped in lead foil, and even by the therapeutical use of lead &c. Again cases are on record caused by using tea packed in lead foil, cooking utensils made from an alloy containing lead, the juices of food probably dissolving out the lead; not only has poisoning been caused by internal use of lead medicinally but also by its use in one or another form as an application to ulcers &c. Either as ointment, lotion

or plaster; and even as Collyria and vaginal injections, though rare these latter instances may be, they should be born in mind, whenever lead is employed in this way. The habit of chewing shot and pieces of lead, have been known to give rise to manifestations of poisoning. Children may be poisoned by sucking leaden toys, glazed writing cards, painted artificial nipples &c. Or again by using articles of food which were preserved or packed or cooked in leaden vessels; by the use of hair dyes and face powders, containing lead and the inhalation of air in freshly painted rooms. Many more are the articles reported, as having caused poisoning.

"Those who are most liable to be poisoned. Cases of lead poisoning are more generally found among

those who handle it in one or another form, or those who are brought constantly in contact with it in their daily work. Among these we have 1. Manufacturers of lead preparations, as white and red lead litharge, sugar of lead &c. 2. Those who use lead colors as color grinders, painters, artists, playcard makers, manufacturers of wall and ornamental papers &c. 3. Those who use lead varnishes as japanners, upholsterers, gilders, glazers &c. 4. Those who use lead glazing as potters, china ware manufacturers &c. 5. Those who work with molten lead, as pipe founders, lead smelters, lead moulders, tinners, bronze workers &c. 6. Those who use the solid metal as type setters and cutters, plumbers, miners &c. Also manufacturers of perfumeries, hair dyes &c. and chemists; then again those occupied in

bleaching Brussels lace, which is beaten with white lead, to whiten its fibre, are especially liable. Workers in metallic lead, as plumbers, miners &c. are rarely affected, it being a disputed point whether lead miners ever are poisoned. Lead smelters who inhale the fumes, rarely escape. Painters and artists probably are more often poisoned, than any others. White lead workers are said not to be so often affected as might be supposed, probably they exercise greater care, knowing their danger and thus escape. Dr. M. Eulenberg has repeatedly seen it in silk workers, who are in the habit of touching the lead weights with moist fingers. It has also been shown that lead is very fatal to the life of the foetus, as proven by the fact that woman the subjects of saturnine

cachexia abort early, or produce still born children.

"Susceptibility." It does not require close observation or investigation to recognize that all individuals are not alike susceptible to the poisonous influence of lead; many can in the most reckless manner handle and work with lead and yet not be brought under its toxic influence, or only after many years of working with it, as painters &c. other again, by the most trivial contact may be poisoned. Sometimes the already poisoned conditions may exist, yet remain latent until at once it bursts forth in a most aggravated form. All irregularities of living, as in those who are addicted to inordinate drink, and other excesses seem to heighten susceptibility. Those who had preceding attacks

may have subsequent ones, without necessarily being again exposed to the cause. Sometimes the first symptoms of lead poisoning may appear on the outbreak of another disease and disappear again, when that disease is recovered from. Some are able to follow their occupation as painters, or workers in white lead factories and not suffer materially, whereas a case is on record in a fishing tackle maker, who suffered from lead colic in a severe form, and which could only be traced to his chewing bits of metallic lead, which he chipped off, while engaged for a few days in making sinkers. Some persons have presented symptoms of plumbism, after taking a few doses of lead medicinally, and others again have taken it for a protracted period of time and remain intact.

Prophylaxis. Now that the various media by which lead enters the body, and those who are most liable to be poisoned by it, have been pointed out; it is apparent that many are unavoidably exposed to its influence, therefore naturally the means will be sought for, to prevent its introduction into the body, or at least to reduce it to a minimum. Many cases of lead poisoning could be prevented with ordinary care and means, which are within the reach of everyone, and to a great extend these have been exercised, so that poisoning by lead is now comparatively rare; those cases that do occur are either the result of accident, ignorance or carelessness. The prevention of lead poisoning is of far more importance, than its treatment; in regard to sanitary measures, there is often much to contend with, owing to the indifference of

operatives toward them. the factories, work shops &c. should be placed in high airy regions and buildings, they should be thoroughly ventilated, ventilation is one of the first essentials; workmen should often be changed about and their working hours shortened, they should avoid all excesses in living, overwork, exposure to inclement weather &c. they should observe scrupulous cleanliness, rinsing mouth frequently, cleansing teeth, washing hands, especially should this be done before going to meals, which should never be eaten in the work-shop, they should often bath the whole person, working clothes should not be made of woolens, but of strong compact linen, they should be worn as little as possible after working hours, and should be often washed, a light impervious cap might also be worn; masks of various kinds have been

devised to prevent the poison, entering by the respiratory tract, when these cannot be had, sponges, should be worn saturated with dilute sulphuric acid, before the mouth and nose. It also has been recommended to smoke and chew tobacco, workmen should partake freely of nourishing especially fatty foods. As soon as any symptoms indicating the poisonous action of lead appear, work should be stopped at once, avoiding all contact with lead, and treatment begun at once, furthermore another occupation or employment should then be sought for.

Prophylactic remedies have been much used those proving the most useful being drinks acidulated with sulphuric acid and the use of milk. A milk diet is asserted by M. Delight, an experienced glass manufacturer of England to be preventative

of lead poisoning in those exposed to it. It has been claimed by Dr. Liebig, that the disease called painters colic is unknown in all manufactories of white lead in which the workmen are accustomed to take as a preservative sulphuric acid lemonade, "A solution of sugar, acidulated with sulphuric acid." If this be so the lemonade must protect the system by converting any other salt of lead which might be there, into an insoluble salt; solubility being requisite to give efficacy to any poisonous substance. Mr. Benson manager of the British white lead works of Birmingham stated in the Lancet, that he has tried this method of preventing lead colic, which had prevailed to a great extend, it soon began to diminish, and in the fifteen months previous to the date of his article, not a single case had occurred.

There is a notion prevalent in some places, which apparently has some foundation, that the free use of fat and of oily foods are preservative against lead colic; a physician near Breda, Eng. informed Sir Geo. Baker that the village in which he lived contained a large number of Potters, among whom he did not witness a single case of lead colic, in the course of fifteen years; he attributed their immunity to their having lived very much on butter and bacon and other kinds of fat foods. De Haen also was told by a physician who owned a lead mine in Styria, that the laborers there were once very subject to colic and palsy, but after they were exhorted by a quack to eat a good deal of fat especially at breakfast, they were exempt from these disorders now for over three years. This kind of prophylaxis is very easily adopted.

With these simple remedies, scrupulous cleanliness and thorough ventilation, the contraction of lead-poisoning can be prevented. If hot water is conducted into houses in lead pipes, after standing some time, it should be allowed to run, as the water has been known to become impregnated with the lead, and thus made poisonous. As a matter of course, the use of leaden utensils for kitchen purposes should be avoided. A writer in a French medical paper even goes so far as to prohibit the carrying of canes with leaden mud pieces.

"Pathology and Morbid Anatomy." The conclusions of Harnack's experiments on the modes of entering lead salts are important enough to be introduced here: Lead colic as a symptom of chronic lead poisoning is due to irritation of the intestinal ganglia by the lead and the consecutive

disorder of the intestinal function. In man the usual obstinate constipation is owing to spasm of the intestine, but in the lower animals on the other hand, there are increased peristaltic action and diarrhea; the spasm of the intestines holds food from its vessels, causing plethora in other organs, while arterial tension is diminished and slowing of the pulse; the pain is caused by intestinal spasm and in part also by the consequent irritation of the peritoneum; the retraction and rigidity of the abdominal walls result from a reflex contraction of the muscles of the walls.

2. The symptoms of lead paralysis are due to the action of lead on the striated muscles. The fact that in the beginning muscles do not loose their excitability, but only are rapidly exhausted, makes intelligible why muscles paralyzed by lead are not tetanized

by the induced current, but are still competent to manifest their reaction occasionally. 3 Neuralgia of the joints from lead is due to the irritation of certain motor nerve centres by the metal. 4. Cerebral symptoms of chronic lead poisoning are due to modifications produced by its various parts of the central organs of the nerve system; they are mostly of an irritative nature and do not usually involve until late the centre situated in the brain and Medulla Oblongata; experiments on animals throw no light upon occurence of anaesthesia, amaurosis &c. from lead. The observations of Friedländer are fully in accord with these conclusions, as are those of Dejerne and also the report of a fatal case by Zunker (Zeitschrift f. Klin. Med. I. 4[illegible]) who found a high degree of degenerative neuritis, greatest however at the periphery and diminishing

toward the origin of the nerves is marked degeneration and atrophy of the affected muscles and an irregularly distributed atrophy of the gray substance of the cord. On the whole, he concludes that in lead palsy the nerves and muscles are at first affected, and that only in course of time do lesions arise in the spinal cord and other organs, among these lesions is degeneration of the arteries, causing in the eye amblyopia, in the kidneys, chronic sclerotic nephritis and in the joints arthritis, which in predisposed persons assumes the character of gout.

"Post mortem appearances." After death lead is found in various organs of the body; the spleen, liver, lungs, kidneys, heart, intestinal walls, and relatively in large quantities in the brain; it is largely deposited in the substance of the muscles

and nerves; the destruction of Hallerian irritability; the disappearance of the striation of the granular condition of the nerves being probably due to the direct action of the metal. The metal passes off mainly with the urine, but according to Dr. Pereira and others, there is some illumination by the skin. Dr Taylor states that it also has been found in the milk. It is apt to remain in the tissues for some time, and has been detected by M. L. Orfila, as late as 8 months after its reception has been discontinued. Andral relates five cases in which after death, preceded by painters colic, he found neither inflammation nor any remaining trace of spasm; the intestines were neither dilated nor contracted, but of their natural texture and appearance. Merat gives the dissection in four fatal cases by the supervention of coma; there was no

discoverable mark of disease, the alimentary canal was empty and large bowel contracted, as they were also found to be in rabbits and guinea pigs, who died from lead poisoning. Maier in his experiments on the slow poisoning of the same animals found fatty degeneration of the gastro intestinal glands, dilation of the arteries, venous congestion, proliferation of the submucous connective tissue with sclerous degeneration of it and the mesenteric ganglionic apparatus, these lesions he associates with saturnine colic, and the emaciation of the animals experimented upon. Popow directed his attention more particularly to the alterations produced by lead in the spinal marrow, he found that the earliest local changes consisted of congestion of the veins of the Pia mater and scattered exudation of blood. The gray substance of the cord was also

hyperaemic and presented bloody extravasation. The nerve cells of the gray substance were in all cases altered, this appeared to be uniformly the starting point of the lesion, even when the white substance was more or less involved, hence Popow concluded; that the spasms, anaesthesia &c. of lead poisoning must all be referred to their primary origin in the Spinal cord centres and not to any lesion of the nerve trunks. The investigations of Friedlander into the nature of the lesions causing lead palsy, led him to conclude that lead affects the structure of the muscles as well as their functions, causing wasting of the muscles, of the nuclei of their cells and an atrophy of their fibres. This opinion is opposed to that of Popow's. Where paralysis has long continued, the muscles and nerves supplying them

are atrophied and sulphuret of lead found in their substance; it has also been extracted from the spinal cord after death. Malassez, ascertained that lead poisoning is attended by a diminution in the number of the red corpuscles of the blood. (Le Mouvement Medical 1873).

Lead usually causes chronic, exceptionally an acute form of poisoning.

"Acute lead poisoning. Few cases of acute poisoning by lead are on record; it is usually the result of accidental administration of an overdose of the acetate of lead. When this is swallowed in large quantities and retained, it causes intense gastric irritation, sometimes choleriform symptoms, numbness, paralysis, coma and collapse; owing to the fact that so large a quantity of the acetate will be rejected by vomiting, cases of acute poisoning are

rare, and seldom terminate fatally. An overdose of the acetate, causes besides a sense of constriction and sweetness in the mouth, pain in abdomen, followed by vomiting and diarrhoea, which is sometimes bloody, the limbs are tremulous; patients are affected by slight spasm or even convulsions; sometimes there is giddiness like that of intoxication, there may be fever, hurried respiration and scanty urine; recovery from acute lead poisoning is the rule no matter how severe the primary symptoms may be. Doses of from two to eight drachms have been taken without permanent injury, but again, protracted derangement of the digestion is induced, which may be the ultimate cause of death. One case is recorded, where a drunken man, took three ounces of this salt and although not treated for twenty four hours recovered. A singular

case of death by acetate. Fatal is on record of a woman who while using this salt as a vaginal injection was seized with peritonitis, of which she died; a precipitate of sulphide of lead was found on the surface of the peritoneum (Am. Jour. of Med. Science Oct. 1880 p. 577)

Acute poisoning may be followed by convalescence as already stated, or by symptoms of chronic poisoning. Various salts of lead are used in medical practice, considerable doses have been given without serious effects resulting. When doses of one or two ounces have been given, the following symptoms have been observed; in addition to those already mentioned; a burning, pricking sensation in throat, with much dryness and thirst, followed by severe colic with all the symptoms. The abdomen is tense and skin drawn

in, pain is relieved on pressure, and is followed by remissions, generally constipation, if bowels are evacuated the contents are usually dark in color, probably owing to the conversion of a part of the lead into a sulphide, the skin is cold and when not relieved at this stage, we have great prostration of strength, dying in, or followed by cramps in calves of legs, pain on inner side of thighs, anuria and sometimes paralysis of the limbs, accompanied by nervous phenomena. A well marked blue line sometimes is present around the margins of the gums where they join the teeth. The remarkable series of cases of poisoning by acetate of lead which has been reported by Dr. Bowers, of Stockbridge, see Lancet May 5th. 1841, p. 478. In animals according to Dr. Litscherlich, when the dose is large, the mucous coat of the

stomach is attacked and corroded; the change appears to be purely chemical and takes place in that part of the body with which the salts of lead come in contact. If given in small quantities it is decomposed by the gastric secretions and exert no corrosive action on the mucous membranes; when the salt was given in a state of albuminate, dissolved in acetic acid, death took place with great rapidity but on inspection the stomach was not found corroded; this corrosive action belongs to the neutral salts and is not manifested, when the dose is small, or combined with an acid. Nothing seems actually to be known concerning the fatal dose of the substance; it may be taken in comparatively large quantities, without producing serious effects; thirty or fourty grains have been given daily in divided doses without injury.

Carbonate of lead in several instances has proved fatal preceded by symptoms of acute poisoning, usually it causes the chronic form of poisoning.

Treatment. We may sum up the treatment of acute poisoning by lead, by saying that the same measures should be adopted as in treatment of poisoning by the corrosive poisons, Evacuating contents of stomach as soon as possible, giving emetics, saline purges &c. afterwards giving mucilaginous drinks. supporting the strength of the patients &c. and treating symptoms as they arise; if chronic symptoms follow, treat as hereafter directed.

Chronic poisoning by lead. Chronic lead poisoning is the form with which as a rule the physician has to deal. There are four distinct affections or forms in which chronic lead poisoning manifests

itself viz: Colic Arthralgia Paralysis and Encephalopathy. Of these Colic is by far the most frequent, it having occured 1217 times in 2171 cases published by Tanquerel des Planches, Arthralgia occured 755 times, Paralysis 127 times and encephalopathy about 72 times. These various affections will be taken up separately. Chronic lead poisoning will first be considered in a general way.

"Cause of Chronic lead poisoning." When lead in very minute quantities is constantly taken into the system characteristic and more or less serious consequences are certain to ensue sooner or later. In most such cases the poisoning is very insidious and not infrequently its source is only discovered after patient research or by accident.

"Diagnosis of Chronic lead poisoning." A history of the case including a knowledge of the occupation of the

patient will generally mount any error in Diagnosis. The presence of the peculiar cachexia, the existence of the blue line around the gums and in the later stages, the predominance of the paralysis of the extensor muscles, especially of the forearm and wrist will tend to render still further the diagnosis accurate. The connection of gout seems also to be so frequent as to assist in diagnosis. Dr. Garrod was the first to point out this remarkable connection between Gout and Plumbism. 1/4 of his hospital patients with gout had suffered with lead palsy. Indeed whether that connection is accidental or due to the fact, that constitutions liable to gout are also peculiarly susceptible to the toxic influence of lead, is still to be decided, general experience seems to confirm the accuracy of Dr. Garrod's observation.

Symptoms of Chronic Lead Poisoning. The symptoms are usually well marked, often produced by carbonate of lead, proving fatal at times, a great amount of mischief having been done, before the cause is discovered. Those who are under the chronic operation of lead often suffer more or less in their general health, their complexion becomes sallow and unhealthy looking, the skin dry and harsh; they suffer from thirst and loss of appetite; the mouth feels furred with a sweetish metallic taste present all the time. The pulse is slow, the secretions are all generally diminished, bowels constipated, with pain, symptoms present, the patient gradually loses flesh and strength. He is ill at ease, suffering at times with melancholia and insomnia, the result of mental and physical debility. Simultaneously with progressive wasting of body, yellow unhealthy ear

skin &c. Then is developed a symptom, pathognomonic of chronic lead poisoning viz: discoloration of gums, which are at first bluish, becoming a dirty gray, at same time the gums are corrugated, bleeding easily. The teeth take on a dirty brown color, which gradually spreads over the whole mouth; the breath is foul. The patient may at this time be attacked with colic, the pain of which is paroxysmal, with intermediate periods of rest, when treatment is still deferred, then the patient will experience more pains throughout body, sooner or later paralysis either suddenly or gradually manifests itself, by heaviness, fatigue, helplessness and tremor in hands, which goes on to complete paralysis of certain sets of muscles usually motion, and frequently sensation also being affected. Gastralgia is an early symptom, in part due to the fact that the metal acts directly

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on the nerves of the stomach &c. Anaesthesia often present is found about neck chest, the forearms, the palmar surfaces of hands and fingers &c. usually symetrical in its distribution. Paralysis may invade the laryngeal muscles and cause aphonia. Anaesthesia of Optic nerve is also a result of the direct action of the lead, but dimness of vision and a sluggish pupil may also be due to the albuminuria which is so frequently present, the former as well as the latter causing amaurosis. Will often find on examination, that the liver is diminished in size, that the abdominal fat has disappeared and that the intestines are contracted, the fatty walls are drawn in toward the spinal column; when we have these symptoms present we find that the skin assumes an icteroid hue, the conjunctiva are yellow, and the urine stained

with biliary coloring matter. Lead may cause albumenuria, but probably it in most cases only hastens the developement of changes in the kidneys already impending.

Prognosis. The various forms of chronic lead poisoning rarely end fatally. Nearly always they can be sucessfully treated, the more certain is this, the shorter the time that has elapsed before treatment is begun, necessarily we assume, and it is borne out by observation and clinical experience, that the longer the condition has lasted, the more difficult the cure, or rather the more uncertain is a favorable result. There is no specific in its treatment, therefore the more should prophylactic measures be established and practiced. As already observed, death is a rare sequelae; it may however occur from the gradual failure of nutrition, consequent to saturnine cachexia, or

again by the extension of motor paralysis to the muscles of respiration.

"Burton's blue line." Before taking up the various forms of disease caused by chronic lead poisoning. I will note as briefly as possible, one of the symptoms, which is nearly always present, and which is so characteristic and constant, that it is considered by many authorities to be pathognomonic viz:- the discoloration about the gums, known as "Dr. Burton's blue line", as it was first fully described by him in this connection.

It is of considerable importance from a diagnostic point of view; it is the formation along the edges of the gums of a blue line immediately adjoining the teeth. This line is in the substance of the gums, but appears to be largely determined by the amount of tartar present and is supposed

to be due to the precipitation of the lead in the form of a sulphide, by the sulphuretted hydrogen, emitted by the decomposing matters which are mingled with the tartar. This blue line is however not an infallible sign of lead poisoning for it occasionally becomes developed in the course of a few days, when taking medicinal doses of lead. It is generally present in lead workers, who are free from all other symptoms; and then it remains often, for a long time after every possibility of contamination or poisoning is likely; again it is sometimes absent in cases of undoubted plumbism; and lastly it may be caused by copper and other metallic incrustation. It is claimed that a similar blue line may be detected at the edge of the gums and at the margin of ulcers. That it is owing to the presence of tartar, is shown

in the fact that when there are no teeth, the line is broken, or when the tartar is removed, from one or several teeth, the line will fade, remaining around the others. The coloring material is probably sulphide of lead, or a similar salt of other metals. Tartar being very porous, admits into its substance fluids charged with animal matter which may decompose them and furnish sulphuretted Hydrogen, supposing a salt of lead to be present, a sulphide of lead would be formed, which would give the color in question to the tissues in which the formation took place. I will suggest here that the saliva itself contains sulpho cyanic acid and from this source sulphide of lead may be formed.

"Lead Colic. The affection now commonly known

as saturnine or lead colic, has been described by various writers at different times and places, under a variety of names viz: Painters colic, Plumbers colic, colic of Poitou, colica Pictonum, Devonshire colic, colic of Madrid, rachialgia, dry belly ache and others, all relate to the same affection, it being one of the forms in which lead poisoning is manifested. It differs from ordinary colic, not only in its Etiology and clinical history, but also in its pathological character; it is not a spasmodic but a neuralgic affection, that is a variety of Enteralgia. The abdominal pain is usually a part of a more general disease.

"Etiology of Lead Colic." It is said to be oftenest caused by the carbonate of lead; but as the mode of introduction and the compounds

of lead that cause poisoning have already been discussed, it is not necessary to dwell further on this point. Sir Geo Baker was the first to make out the cause of this malady, he set on foot an inquiry into the origin of what was called Devonshire colic, he found first that it occured chiefly in persons who drank cider manufactured there; by degrees he traced the source of the colic to the admixture of lead with the cider, either designedly, for the purpose of sweetening it, or by the inadvertent employment of lead in the construction of the cider mills and vats.

"Symptoms and Clinical history of Lead colic." We usually find that the patient was suddenly attacked with the characteristic phenomena belonging to lead colic, on careful questioning we learn

That the attack of colic was preceded by obstinate constipation of bowels, loss of appetite, often followed by nausea and vomiting; among the earliest symptoms discoloration of teeth and others already described under Chronic Poisoning. The attack is often immediately preceded by severe stretching pains in the region of the spermatic cord. The pain of the colic is intense in character, the attack sudden, and indicated by the patient experiencing acute lancinating pain in Epigastrium, which is somewhat relieved by firm pressure, the patient often lying flat on floor, pressing his abdomen firmly against it. The pain is often described as a boring, pressing, pulling, tearing, cutting, pinching, sensation, going in various directions, the centre being the umbilical region following

particularly the region of the ascending and transverse colon, however radiating at times over the whole Epi and hypo gastrium, & extending to the lumbar region, The pains are sometimes severe and sudden; deep and firm pressure usually relieves and not aggravate it, however sometimes have hyperesthesia of the abdominal walls. At times there is intense pain over the region of the kidneys, the urine is scanty and high colored. The abdominal walls are always very tense during the attack, and the Epigastrium drawn in. The abdominal recti muscles are usually & spasmodically contracted and hard as a board, on palpation and inspection we can often make out the contour of the intestines which are distended with gas, which give on percussion a loud, deep not tympanitic

sound, moving away under a loud rolling gurgling sound, to appear again in another part of the intestines, owing to certain constrictions, which are particularly found in the caecum and colon; these constrictions are apparently caused by spasm of the intestinal muscles, the pains differ in no respect from those which follow upon impermeable intestinal stricture and are due to powerful contractions, frequently repeated of certain lengths of bowel following immediately; we have in addition, tonic contraction of the sphincter ani; these symptoms as a rule are noticed in each consecutive attack. The constrictions account partly for the retention of the faeces, although we do have constipation without constrictions &c. Fauqueral des Planches found in 1217 cases of colic, that constrictions

where present in 1140 instances. The constipation is often exceedingly obstinate, lasting often from eight to fourteen days, and frequently three weeks. Now and then, there are noticed other phenomena, which are however rare as compared with the preceding viz: vomiting, incontinence and retention of urine, drawing upwards of testes &c. Aussing albumenuria is often present during the attack; according to Renzi, particularly in those cases where there is retraction of abdominal walls and its accompanying symptoms, the retraction of muscles, causing compression and mechanical stasis of kidneys, with transition of albumen. Very often the attack is accompanied by abnormal phenomena in the circulatory system, in its central organ as well, as in the arteries, veins and capillaries viz: a more

or less weakening of the heart action, which is always quite marked, also a constriction in the vessels of the peripheral circulation, the arterial anaemia making itself apparent by the pallor and coldness of the face and extremities as well as in the subjective chilliness of the patient, which often goes on to a marked rigor, causing chattering of teeth, and accompanied by small, but full pulse in the arterial extremities. The pathognomonic hardness and wiryness of the pulse (giving a sensation like that of a wire under the finger) was pointed out by Stoll. In connection with it, we find heart action lessened, but feeble and hardly discernible, though contractions may be increased in number, as a rule they are lessened. The retardation of heart beat is very characteristic. The arterial pulse

found in his 1217 cases 678 (more than half) with a pulse of only 30 to 60 per minute. Eulenberg recording a number of cases in which the pulse was only 28. The slowness and wiryness of pulse seems to be in proportion to the intensity of the pain. Leutin found in foundrymen in the Harz, that at the heighth of pain the pulse was very slow and tense, and declared it a favorable symptom, if it increased in number during 6 minutes. Eulenberg found a pulse of 120 only in mild cases and as a rule toward the end of an attack. An attack of colic may last from a few minutes to many hours, with slight abatements and exacerbations, even for one or several days. The recurrence is irregular, sometimes daily, or several in one day, often not again for years or less greater

intervals. Often patients who have been exposed for years to the cause, suddenly without any accountable reason are attacked with the colic, which may then recur daily for weeks, with exacerbations and intermissions and in severe cases have no remissions at all, or very slight ones, continuing pain during the whole time; after the circle of attacks has been run or cut short by surgical interference, the individual may be free for a long time, months even years elapsing, when suddenly the same phenomena may and are traced; the intervals however grow shorter with each successive attack. Generally symptoms of graver import appear, before many such attacks occur. Lead workers can often remember the number of attacks through which they passed before symptoms of paralysis

come on; there is the greatest individual difference as to the number of attacks of colic they have before palsy occurs. Eulenberg gives an account of a painter 67 years of age, whom he was treating. He became apprenticed at 17 years old, when 25 he had his first attack of colic at 29 the second, at 30 the third attack, after this he passed a long interval, he had altogether 7 or 8 such colics and although constantly exposed no other symptoms of graver augury appeared; again the same writer records another case of a painters apprentice 18 years old, whose father was a painter and who had suffered repeatedly from colic; this boy had in the course of 3 years four severe attacks of colic which culminated in a severe paralysis. If this condition is left without treatment the

attack is of uncertain duration, relapses are liable and if patients are continually exposed to the cause of the colic, it will gradually become complicated with palsy or it may terminate by a fatal brain involvement.

Pathology and Morbid Anatomy of lead colic. Much has been said and written pertaining to the pathology and morbid anatomy of lead colic. But in this as in many other obscure conditions, writers vary. Some writers, among them Haen and Mustrostwyck claim that the colic is owing to a morbid condition of the abdominal sympathetic ganglion system; others again, among them Andral, Grisolle and Rangue claiming in addition to the involvement of the sympathetic system, that parts of the spinal cord is affected; others deny in toto the neuralgic origin, believing it to be

in some change in the anatomical arrangement of the intestines or abdominal walls, added to these unlucky assertions we have those of Bordeu Broussais Renauldin &c. that it is an inflammatory condition of the intestine: those of Stockhausen, Parisot &c. claiming a gradual evaporation of the intestinal wall to be the cause: Gourdon and de Renzi believe it to be owing to an accumulation of stertoraceous matter; Desbois to an accumulation of gas; Ilsemann, Hoffmann &c. to spastic constriction of intestines and again Briquet, Giacomi &c. thought it to be caused by the contraction of the diaphragm and abdominal muscles. Lastly we have the positive assertion of Tanqueral des Planches, that the colic was of sympathetic origin, which he not alone attributed to the mesenteric plexus but also

to those regions, where pain was located as in the parts, to which are distributed the Coeliac, renal hypogastric &c. plexus. This declaration was based on the claims of Physiologists and Pathologists of that time, that the sympathetic system alone was the nervous centre which supplied motion and sensation, for the vegetative organs; Fouqueval des Planches said: „Until such time, that it can be shown that there are nervous going to and from the abdominal viscera, controlling motion and sensation, others than those from the sympathetic system, we must believe this to be the most rational theory!") We arguing from this standpoint, opposes the theory, claiming involvement of the spinal cord, only admitting it, when simultaneously with the colic, we have arthralgia and

paralysis, he claiming that the colic alone was due to the involvement of the sympathetic system. However post mortem examinations have not enlightened us. Fauqueral des Planches found in a collection of 49 post mortems only one in which there was any abnormality of the sympathetic ganglia; in this instance the ganglia of the abdominal region were increased to thrice the normal size, as compared with those of the thoracic and cervical ganglia of the same subject; they were of a grayish yellow tint throughout, although apparently of normal consistence. In the other 48 cases, the result was a negative one; and we must therefore conclude that this isolated case must have been accidental. Other investigators failed equally as well, to show any lesion

elsewhere. Furthermore we labor under the disadvantage, that death is often the result of some intercurrent disease and necessarily the pathological aspect is much altered. In the 19 post mortems quoted, there was found in 16 cases knotting and apparent contraction of the intestine, in 7 cases hypertrophy of Brunners glands, in 3 cases moderate enlargement and swelling of Peyers patches, in 4 cases thick layers of coagulated slime on the mucous membranes of the intestine in 5 cases softening of the deeper tissues of the intestinal walls; and in 20 cases a normal condition throughout the intestinal tract. Similar results were gotten by Andral, Louis Stokes &c.

Under such circumstances we are compelled to confine ourselves alone to results as given by

clinical observation, and then the question arises. Will these give us criteria that will prove the positive origin of the colic to be in certain structures, whether in the sympathetic system or not, which we can designate as the characteristic lesions? In the first place we know that the assertion of Tanqueral des Planches, that motor and sensory impulse and function for the viscera was alone supplied by the sympathetic system, is not correct, again we know that consciousness or recognition of sensory and motor impressions in man, exclusively is cerebral; further we know that motor functions of the vegetative organs are incited and modified by the cerebro spinal nerve centres - Admitting then that the symptoms of lead colic are of neuralgic nature; we

must look for the sensory nerve fibres, which transmit pain to the brain centres. Are they sympathetic or cerebro spinal? If they were exclusively sympathetic, they would only be concerned in conducting sensation in colic, how can we then account for the spastic conditions of the muscles of the abdominal and intestinal walls. Romberg claims among the characteristics of hyperasthesia of the sympathetic, (which are in accord with its physiological designation) first of all its power to incite reflex action in the muscles, in the voluntary as well as involuntary. Then, in the sympathetic system the sensory impresses seldom are recognized, that is they do not cause distinct consciousness, before producing or transmitting the reflex excitation. Again the impresses are transmitted both ways and it

follows that not only do we have sensory, but also motor action at the same time, causing contraction of muscle fibres, whether in the heart, in the intestine, in the ducts of glands or in the abdominal muscles. Then again next to the reflexes the trophic nerve energy is particularly effective more so than in the hyperasthesia of the cerebro spinal nerves.")

If we apply these facts to the pathology of saturnine colic we find that certainly, a number of analogous conditions exist, which are accounted for by reflex actions. To these belong the partial spastic constrictions of the intestines and the sphincter ani, as well as the phenomena of nausea, emesis incontinence and retention of urine, drawing up of testis &c. which are all accounted for as being reflexes of the stomach &c.

Particularly were the contractions and board like hardness of the abdominal muscles thus accounted for. These assumptions probably were based on the belief, that disturbances of sensory function was the essential feature of the colic, and that the motor disturbances were only secondary, dependant on it; Eulenberg claims that this is a fallacy, he claims that it is no more a pure hyperasthesia of the sympathetic system, then it is in Angina pectoris. He claims that it is a mixed sensory motor neurosis; that the conditions that cause the abnormal sensory phenomena, can also cause at the same time, anomalous motor acts, by direct action on the motor nerve fibres and also on the muscle fibres. He believes this to be best shown in lead colic. This

seems to me to be highly probable, when we remember that Tanqueral des Planches and others in experiment on the human skin, and Gusserow on animals have shown by chemical analysis that the lead is deposited in muscles in considerable amounts, we know also that the action of lead on the muscle fibres, is highly causative of contraction, be it direct or on the intra muscular nerve ends, this action is particularly shown by clinical observation of the styptic, astringent action of lead. Nothing appears to me to be more rational, than the assumption that the local action of lead in the intestinal walls cause its muscles fibres to contract and in this way bring about the spastic constriction of the intestine this applies equally as well to the

oesophagus, stomach, ureters, bladder, urethra, rectum &c. As regards the contraction of the abdominal muscles, which are supposed to be caused by reflexes, and which according to Eulenberg lacks proof, he claiming that it never has been shown or demonstrated, that the sensory nerve fibres of the viscera can cause contraction of the abdominal muscles by reflex action. Whichever of these theories may be true, I will not venture to say; however I will suggest, that the hardness and tension of the abdominal muscles are not constant by any means, or do not even appear to be in proportion to the intensity of the pain, and in many instances are entirely absent, which seems to negative the connection of the two phenomena (sensory and motor). The

question remains to be answered, whether the tension of the abdominal walls in lead colic is a direct excito motor action of the lead, which probability has been experimentally shown. (Kühne, - direct and indirect irritation of muscles; Reicherts and Du Bois Archiv 1869 heft 2) showed that acetate of lead in muscles cut crosswise, caused contraction. Again Ehrenhaus and Eulenberg have caused it in experiments on the nerves, by direct action of the lead. Or whether it be the accompanying phenomena of the co ordination joint action, which are caused through the spastic contraction of the lower portion of the intestine, whatever may cause it; certain it is that many nervous phenomena, are heedlessly attributed to reflexes, without physiological proofs. In counter distinction to the foregoing the symptoms

indicating a general disturbance of the circulation, particularly the marked slowing of the heart during the attack of colic, are undoubtedly owing to reflex phenomena, dependant on the irritation of the visceral nerves, or may be due to a condition brought about by the inhibition of the heart, caused by the irritation of the Vagi and their centre in the Medulla Oblongata. As it is a well established fact, that the visceral fibres of the sympathetic are not only directly connected with the Vagi, but also with their medullary centre, so we can easily understand the disturbances of the circulatory apparatus.

"Treatment of acute colic." As lead colic has been known for centuries, the diagnosis clear, also as we highly typical, so gradually certain modes

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Treatment have been established: They have been dietetic, antiphlogistic, revulsive, sedative, evacuant (and combined methods). Of these the dietetic and revulsive need hardly be noticed. Of the chemical remedies, sulphur baths it is said eliminate the lead by the skin; iodide of potassium by the kidneys &c. Others use sulphuric acid in lemonade, sodium and magnesium sulphate, alum, zinc sulphate, mercury &c. These various remedies are recommended, however I do not set up antidotes. The antiphlogistic measures, formerly so much in vogue, are not needed unless in how inflammatory troubles complicating the colic. Paluzzi in 1868 employed leeches to the skin, believing it to be the seat of the trouble. The sedative and evacuant treatment is now

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universally adopted; the sedative measures act like a charm in relieving pain, and muscular spasm of the bowels, the excessive hardness and tension of the abdominal muscles and above all the stubborn constipation, which cannot often be relieved by the most powerful drastics. It is a fact to which such observers as Niemeyer, Stokes &c. testify, that in lead colic to relieve constipation, there is no better remedy than the usually constipating Opium. The evacuant treatment, is for the illumination of the lead, however it should be preceded by sedative remedies, to more certainly insure their action. It seems to me to be more rational to give evacuants after the results have been gotten from sedative remedies, when the pain is relieved, the abdomen pliable, and thereby often a first evacuation

procured; Castor oil is one of the best as it is least irritating; Galvanic and Faradic currents have been used, but this practice is not established, though good results have been gotten thereby. Warm baths, fomentations, frictions with warm oil &c. are palliative. The following treatment has been practised at Guys hospital, where a great many such cases are received, "In the majority of cases an ounce of Castor oil mixed with ten drops of Tincture of Opium is given twice daily and large hot poultices of linseed meal are applied to the belly. At night a draught, consisting of 40 drops of Battleys sedative solution (Liq. Opii sedativus Br. P.) in camphor mixture is prescribed, if the bowels have been acted on by the oil taken during the day. In severe cases, accompanied with tenderness of belly and

retching, bleeding from arm to the amount of 16 or 20 fluid ounces may be practiced with advantage, provided patient is young and strong. Pain and distress are thereby quickly allayed and the stomach often loses its irritability and immediately afterwards retains food and medicine. When patient is less robust 15 or 20 leeches to the belly followed by a warm poultice has been found to procure much relief, castor oil with Battley's sedative is given as in other cases, clysters of the oil may be resorted to, when the stomach is too irritable to retain medicine and in all cases a pint of warm gruel injected into the rectum greatly soothes the patient." Mr. Williams states, that according to his experience no relief, is obtained unless the patient is kept under the influence of Opium

for a few hours before giving purgatives and clysters; that while the spasm lasts the use of purgatives is futile even clysters of castor oil are expelled without being soiled by faecal matter; that he begins his treatment by administering a large dose of Opium and then later on give the purgatives &c.

Lead paralysis." Is the most characteristic symptom of chronic lead poisoning, however as a rule one of the late symptoms, often, nearly always other symptoms have preceded it for a long time, as colic, paroxysmal pains in muscles and joints, as well as congestion of gums, cachectic appearance of face and skin with general anaemia and debility. Its cause has been pointed out in preceding lines.

Clinical history and symptoms of lead paralysis. It has been observed to occur suddenly after a

severe attack of colic, where there was obstinate constipation, which probably was owing to the retention of large portions of lead in the system, the constipation necessarily preventing its elimination, which would appear to be a favorable condition for the sudden appearance of paralysis. Often the paralysis is preceded by tingling, shooting pains, drawing pains and formications or it may gradually show itself with motor excitability and disturbance of sensation and circulation in the muscles. Nearly always the forearm and hands are first affected, in most case exclusively, particularly the extensor groups of muscles and of these certain ones in consecutive order, causing wrist drop. Sometimes, though seldom other muscles of the body are affected, especially the Deltoid, Pectoralis, Latissimus dorsi

Serratus anticus major and the Intercostals, it is said to have affected some of the muscles of the neck also - The muscles of the lower extremities are rarely affected, if so, they are generally the Abductors, Adductors and Quadriceps extensor. Paraplegia is very rare, Duquenal des Hanches records but one in 200 cases of Paralysis. The rabid atrophy of the muscles affected is remarkable as well as characteristic of lead Paralysis; combined with it we have the abnormal contraction of the antagonistic muscles. Other modifications of Paralysis are the Saturnine Chorea and stuttering (brought about by paresis of vocal cords and muscles). Occasionally we have progressive General atrophy combined with the Paralysis. With the Paralysis, we may have loss of sensation in the muscles; or it may occur independently

Lead anæsthesia is rarely a primary affection, it is generally preceded by arthralgia. Cutaneous sensibility, electric contractility of muscles and pain are often greatly diminished. The muscular contractility is often so much impaired that a strong induced current will not have the slightest effect, which even cannot at times be excited by a strong primary galvanic current. The patients appearance is anæmic, cachectic and depressed, his breath offensive, retina anæmic, and often a basic murmur at the heart may be present. By chemical examinations of urine and faeces are made, will probably find lead to be present. Before paralysis occurs patient usually has suffered with colic, though this is not invariably the rule. The immediate precursory symptoms connected with the loss of power, are slight

numbness and tremor of muscles of the extremities and rarely we may have this symptom in the muscles of the trunk; ere long the patient observes that he has difficulty in extending the fingers or wrist, with general loss of strength in both hands, these symptoms increase in severity to total loss of power. Dr Hammond claims that the flexors are always involved with the extensors, the difference being only one of degree. Owing to the disease of the muscles, atrophy takes place, the disturbance of equilibrium between the several groups causing contractions. The circulation in the affected limbs becomes languid; painful swelling result in consequence; it is generally supposed that the right arm is oftener involved than the left, this however does not appear to be so; thus Tanqueral des Planches found

in 76 cases of retinitis paralysis of arms, both sides affected in 51 instances, the left in 23 and the right in 24 instances, statistics of later observers do not differ. When muscles of respiration are paralyzed, death usually soon follows. In the acute stage there is frequently in the affected muscles considerable pain and tenderness. According to Duchenne, the muscles paralyzed in wrist drop, are affected in the following order: Ext. communis dig. — Ext. indicis. — Ext. min. digit. — Ext. secund. internod. pollicis. — Ext. carpi rad. longior. — Ext. carpi ulnar. — Ext. ossis metacarp. pollicis and Ext. primi internod pollic. — occasionally the muscles of the back of thumb; but the upper muscles, those of front of forearm and of hand, excepting those mentioned

although they may be enfeebled, seem never to become distinctly paralyzed or to loose their electric contractility, nor even waste. It should be born in mind that the muscles are not necessarily always involved in the order named above, nor that they all suffer in the same patient or to the same extent. The power of supination and pronation remain unimpaired; and if the first phalanges are supported in the extended position, the second and third may always voluntarily be extended, a fact confirming the integrity of the interossei muscles. Sometimes it appears that the Diaphragm is involved and in very rare cases, of which Duchenne gives a striking example, paralysis attacks with more or less suddenness nearly all of the voluntary muscles

The flexors are sometimes slightly involved, but usually not at all, as proven by patients with wrist drop, being able to hold as firmly heavy weights, as in health.

"Pathology and morbid anatomy of lead paralysis." Old writers thought that the paralysis was of spinal origin, they noted a certain steplike progressive poisoning of the central nervous system viz.: The sympathetic ganglion, spinal cord and brain, which were made to account for the different stages, colic, paralysis and encephalopathy. Chemical analysis has shown that the lead is deposited in all parts of the nervous system, according to Gusserow it is found however in greater amount in the muscles; with this deposition we have the symptoms of lead palsy, the rapid atrophy, the

the interference with electric reactions &c. also the affection of certain muscle groups, all seem to prove that the peripheral and primary point of departure of the paralysis is not in the nerve trunks, this is quite evident when we remember that the set of muscles belonging to one nerve trunk (Radial) never are affected at one time, and usually partially so, therefore by exclusion we have only left the intra muscular nerve endings and the contractile substance of the muscles. It is possible that these parts are directly affected by the deposited lead and their function interfered with, or it may be, that owing to the astringent action of the lead, that the muscular coats of the nutrient vessels are so affected as to diminish the supply of blood

to the part and then diminish its nutrition. If the latter statement were true, then it must follow that this is not a true paralysis, but only the functional expression of the primary myopathy, caused by the progressive disturbance of the nutrition of the muscles; we might account for the special affection of certain muscles, as the extensors of forearm, by some as yet unexplained local condition of the trunks of the arteries and nerves. Attention has been directed to the peculiarity of the local blood supply in forearm lead paralysis. Hitzig, "Studien über Bleivergiftung, Berlin 1868," observed in single cases of lead palsy enlargement and varicosity of the veins on the dorsum of the forearm, and concluded therefrom, that this caused a predisposition to

paralysis of the extensors in wrist drop; the local venous distribution, causing a certain degree of stasis, and consequently a greater distribution of the lead in the extensors. Bärwinkel in Schmidts Jahrbücher 1868 volume 139 page 118, attributed the extensor paralysis not to the venous distribution, but to the arteries. The dorsal side of the forearm being supplied by one artery, (a branch of the Ulnar artery) whereas the flexor side has three large supply trunks; interaption to the arterial blood supply must therefore soon follow and be more intensely and more quickly manifested in the extensors than in the flexors; the passage of the posterior interosseous artery through the interosseous ligament may also be of some importance, pointing to a

visible interference with the circulation. Less
paralysis of the muscles supplied by the radial
nerve are generally bilateral and appear
as a rule together, or follow each other at
small intervals; peculiar and pathognomonic is the spreading of the paralysis and
the order in which the muscles are affected;
the first muscle affected, being the most
completely paralyzed: viz the Ext. communis
digit. - then or at same time the Ext. min.
digit. - then Ext indic. &c., with them, all the
muscles supplied by the radial nerve, (excepting the Ext. pollicis &c.) then follows to a less
degree the Ext. carp. radialis. long. and brevior.
the latter being first and more markedly affected, then follows in less degree the Ext. carpi
ulnaris. and abductor pollicis long. until

Ext. Pollic. Brevis. The supinators remain intact, which is quite remarkable, even in marked infantile paralysis, this exemption seems to be constant, sometimes the paralysis encroaches the domain of nerves supplying the muscles, according to Duchenne, the Deltoid is affected preceding at times the general extensor paralysis. Eulenburg has also proven the involvement of the first interosseus, which might be accounted for by the fact that it is supplied by the Radial nerve, the other interossei are rarely affected. It has been claimed, that the paralysis is due to the lead being brought in direct contact with the muscles and deposited in their substance, there might seem to be something in this idea to support it

if it is true that the loss of power is greatest in the right hand and arm, which in painters and others are probably more exposed than the other arm and hand to direct contact with the lead; to oppose this theory, we have clinical facts to show that some of the worst cases of paralysis are due to the use of lead cosmetics. Dr Hammond published a case, he saw in a lady who was in the habit, for a long time of using, "Lucids bloom of youth". Again if it were true that the palsy was due to direct contact with the lead, then the flexors would be the ones most affected, the palm of the hand being first brought in contact with lead. As far as the central nervous system is concerned, no spinal lesions have been found, excepting perhaps in those cases

which are complicated with cerebral symptoms and where inflammation and softening have existed. The trouble is probably in the motor nerve cells of the spinal cord and this in a way yet not made out, no more so than the effects of Quinia, Opium, Alcohol, Strychnine and other substances, by our present means of investigation.

The muscles have been examined by Andral, Fauqueval des Planches and others with similar results. On removing small portions we always find the transverse striae disappearing and fatty degeneration in place of them. The hypothesis, that the affection is primarily one of the muscles is not supported by fact such a thing as muscular paralysis independent of nervous derangement is unknown in the whole

rough of pathology. Those cases of apparent loss of muscular irritability resulting from certain poisons adduced by Bernard, Mitchell and others simply instances in which the loss of nerve irritability took place from its proximity to the centre. When a muscle is no longer capable of contracting, it is because the nerve ceases to act. Facts are against the notion that lead acts by direct contact with muscles, the instances of paralysis in painters hands adduced in proof are opposed by the fact that the left hand is as often involved as the right, though certainly less in contact with the lead, and in the cases of extensor paralysis of the forearm, which have resulted from the use of cosmetics, hair dyes &c. are positively against this hypothesis. Whether the lead paralysis

is myopathic, peripheral or of central origin, remains still to be shown.

Electrical reactions. Exhibit in Lead-paralysis manifold peculiar, but in the figures do not constant results; the Faradic contractility is absent in many cases in the early stages, so that even after one to two months many traces of reaction to the induced current in single or all the muscles affected is totally absent, the other named in the preceding stages is however only in a measure followed; in other cases again the Faradic contractility is retained for a long time, as a rule it seems to be maintained in proportion to the nutrition and functional disturbance. The Galvanic contractility is in many cases positively diminished; in other cases again the Faradic contractility may be decidedly

diminished or entirely lost, the Galvanic remaining the same or may be excessive; the above electrical reactions abnormalities may persist and often may remain the same, after the paralysis is partly or entirely relieved.

Duschenne described a case, where on recovery of the paralysis the Faradic contractility may still remain absent; Eulenberg noting a similar absence of Galvanic contractility in muscles & nerves.

"Prognosis in lead paralysis". According to Dr. Hammond the prognosis is always decidedly favorable if we can get muscles to respond slightly to the induced current, and it still remains favorable, though more time must be allowed if they will respond only to the primary galvanic current; but if we cant get a response to a strong Galvanic current, then the case is hopeless.

Treatment of Lead paralysis. It is not necessary to say, that patients should be removed at once from the cause of the palsy. The first indication is, to remove the lead from the system; this is best effected by giving increasing doses of Iodide, Potassium, which is said to form a soluble salt of lead, which is then eliminated chiefly by the kidneys, some authors caution against its use, as they claim that the resulting compound formed with lead is poisonous, however this may be, clinical observation teaches us that of all remidies that have been used, it seems to favor or expedite early cure most rapidly, when in addition we combine the use of electricity with it. Patients should be cautioned, that though we may remove all the lead from the system, yet the patients

muscles
they paralyzed, in order to restore the muscles, they must be exercised, and to last do this, it must have a stimulus to which they will answer, this electricity affords, each muscle should be acted on by electricity; combined with this kneading, friction and passive exercise should be employed. The patient should have good diet, pure air, warm baths &c. and a regular action of bowels should be established. The results of treatment are sometimes uncertain; in all cases the disease is chronic and therefore treatment should be preserved in a long time. Dr. Hammond says "The employment of small doses of Strychnine, the constant use of electricity with friction or massage to stimulate the injured muscles, are the means most to be relied on.

42

"Lead arthralgia." So generally treated by writers as a distinct affection of lead poisoning. It is clearly defined, and next to colic the most frequent manifestation of lead poisoning. It manifests itself by shooting pains of periodical occurrence, especially at night, oftenest located in the calves of the legs; they are not limited however to any particular region; being however muscular or articular in their nature; any slight irritation may bring on paroxysm, after taking cold, or often after making slight exertions, this is especially true of the leg muscles; anaesthesia of localized parts of skin surface, or of special senses, often accompanies this affection, as indicated by blindness, deafness &c. which pass off without leaving any permanent effect of these organs.

Besides the general symptoms of chronic lead poisoning and the paroxysms of short to shooting pain, the patient suffers in the intervals from a sense of fatigue and constriction in the affected parts. These pains do not follow the course of the nerve trunks, and are intensified by motion and diminished by pressure. The joints finally are the seat of a constant rheumatoid pain. Dr. Garrod has conclusively shown, that the use of lead or its slow introduction through mucuous channels hinders the conversion of uric acid into urea and favors the deposition of urates of soda about the joints, hence the arthritic pain, which accompanys the other symptoms of chronic lead poisoning; and the intimate relation of its presence [illegible] in the organism

and gouty attacks. It is frequently an affection of the intra-muscular nerves and so is felt more superficially in the finger muscles; the swelling of the joints and the arthritic pains are doubtless due, as already explained, to the deposit of the urates in the joints themselves, but the term arthralgia is used to describe that form of pain about the joints caused by lead. The symptoms are usually associated with those of chronic poisoning, although they may occur separately.

Treatment of lead arthralgia. Sulphur baths, combined with the internal use of Iodide of Potassium, forms the most efficient method of treatment; Vallein claims that the Iodide of Potassium has almost a specific action in lead arthralgia. In addition the general

plans of treatment laid down in previous pages on lead palsy, should also be adopted in lead arthralgia.

"Encephalopathy." Is a rare form of chronic lead poisoning, characterized by cerebral disturbance of grave augury viz: coma, convulsions and delerium. The three symptoms often being present in the same patient. An attack may occur abruptly or be preceded by certain premonitory symptoms; stupidity, head-ache, vertigo, sleeplessness or somnolence, ringing in the ears and in some instances amaurosis; as well as rapidity of pulse and stiffness and pain in limbs. Other manifestations of lead poisoning may or may not precede. The coma is more or less profound, in the favorable cases it passes off,

often having continued for one or two days, in the unfavorable cases it increases in degree and continues until death. If convulsions are present, they are paroxysmal, occurring at various intervals, attacks lasting from five to twenty minutes. Delirium if present is of a hilarious type with hallucinations of sight and hearing. Either of the three events may predominate; amaurosis if it does not precede may accompany the attack, it is not caused by retinal changes as shown by Ophthalmoscopic examination. Of satisfactory pathological explanation, cannot be given, some writers attribute the symptoms to anaemia of the brain from changes wrought in the minute cerebral arteries, to oedema of the brain from arterial pressure

and to direct irritation by the lead. Uraemia probably is a contingent element in some cases as the urine is diminished in quantity and found to contain albumen. These effects are however not always due to uraemia, in as much that the evidence of diminished elimination of urea is not always present. Gabel has produced evidence, showing similar effects in dogs, by poisoning them with lead. It is also true that the so called nervous cases of the gouty or small granular kidney. Encephalopathy is probably the earliest form of poisoning; Paralysis are attacked suddenly in only a few instances, in the majority of cases it is developed after other symptoms of chronic lead poisoning have existed.

"Progress in encephalopathy. Is grave in proportion

to the frequency and violence of the convulsions together with the degree and continuance of the coma. More than half of these cases prove fatal.

"Pathology and morbid anatomy of encephalopathy." Post mortem examination reveals no special lesion but in this as in other varieties of lead poisoning chemical reagents detect the presence of lead in the blood and the various tissues of the body. Hypertrophy of the brain is said to exist.

"Treatment of Encephalopathy. There is little to be said in regard to it; depleting or debilitating measures are contra indicated; it should be ascertained by examination of urine how far uraemia may be a factor in causing the coma and convulsions. Hydragogue and sudorific measures are called for, if there be ground to

suppose that there is an accumulation of urea in the system. The symptoms present should be treated, the inhalation of chloroform or administration of chloral to control convulsions &c. And lastly the Iodide of Potassium should be given to the extent of toleration. —

"The writer was prompted to select this subject, for his thesis, as in the past year he has had the opportunity, as clinical assistant at the Dispensary for Nervous Diseases in the city, to see a number of cases of lead poisoning in its varied forms. Some of them presenting symptoms, which excited in him more interest, and led him to investigate and study the phenomena produced by the introduction of toxic quantities of lead into the human organism.

He had no idea, when he began, that the subject was so vast in its detail its pathology so obscure and the theories and experiments pertaining to it so contradictory. He wrote as briefly as possible and tried to gather what to him appeared to be most rational, venturing an opinion here and there as he thought best; which he begs will be pardoned by those who have had the advantages of many years of study, observation and experience.

Henry C. Ohle.
Carroll, Balto. Co. Md.

University of Maryland.
January 1st. 1885.

it may be controlled by packing the wounds tightly with cotton, compression and warm water for a few moments = Then apply warmth, exclude air and elevate the part, always being careful to have free drainage = Here also I think the Elm poultice is very serviceable = Cold is always injurious in erysipelas =

F. Henry Charles -

this point, both as to the promptness and freedom of the incisions = There is more probability of cutting too little than too much = The incisions should be in depth, number and size sufficient to relieve all tension and furnish free and easy drainage = Thus the extent and duration of the disease will be lessened = Free haemorrhage at first takes place which should be rather encouraged than checked unless it tends to prove dangerous when

flour and fuller's earth has been done = The air should be excluded from the inflammed surface = I have seen most excellent results in both the simple cutaneous and cellular forms attend the use of a poultice of the ground inner bark of the Ulmus Americana In the cellular forms as soon as any tension of the integument occurs or swelling appears the part should be laid freely open = Too much stress can not be laid upon

properly assimulated stimulants are indicated= Brandy mixed with milk and eggs is usually very serviceable= The above general hints are more or less applicable to all three forms= The local treatment will vary somewhat with the variety of the disease= In the simple form. The part should be kept warm and elevated= For this purpose wrapping in cotton wool is much practiced and very successful, also dusting with

can stand seems to have a specific effect=
The other symptoms such as high fever and delerium are to be carefully treated=
As erysipelas is an atonic disease all antiphlogistic measures should be avoided=
Tonics and good diet are indicated= In the earliest stage when the first little spot of inflammation makes its appearance an emetic has cut short the attack= As the disease progresses or when food is not taken or is not

result in death - The other forms are always grave and if not promptly and properly treated may prove fatal =
The gravity of the systemic symptoms augur more than the local symptoms =
Treatment Though a disease of so formidable and grave a character the systemic treatment is very simple and I might say specific =
The Tinctura Ferri Chloridi in doses as large as the patient

Prognosis.- The simple or cutaneous form is rarely a dangerous disease, but when it occurs about the scalp it may prove serious or even fatal by penetrating within the skull and affecting the meninges of the brain= In those persons of feeble constitutions or of defective viscera erysipelas is very liable to bring about other troubles that may result in death= Also if it should occur in the mouth and throat it is almost certain to

rapid and irregular
Gradually symptoms of pyaemia and viceral complications will supervene from which death results. The third or Phlegmonous form is a combination of the two foregoing forms and has been pretty well described in the description of them. All the symptoms are more severe, fever runs very high with delerium &c course is more rapid and the prognosis is more grave.

red lines extending towards the trunk - If not relieved the skin will become affected and may even ulcerate = After the disease has subsided repair usually takes place very slowly but may eventually result in complete recovery

From the time of the initiatory chill the fever will continue high -

There may be delerium and and much prostration the patient falling into a typhoid condition, the heart becoming weak,

finding no outlet will burrow (as is the tendency of all collections of pus) in direction of least resistance which is in direction of the muscles and planes of facia =

Thus it extends upwards and down between the muscles. Now, the presence of this pus will cause certain other symptoms

The lymphatics from absorbing this sceptic material will become inflammed and can be seen as a number of

will become reddened and extend in the direction of the muscles and tissues of that portion = There will be an area of bright scarlet inflammation which will gradually shade off into the surrounding healthy tissue =

There will be an increasing hardness =

As the inflammation and swelling increases the cellular tissues will become strongly distended, and tough, and will break down into pus, which,

The cellular form or diffused cellulitis presents many of the above symptoms. The swelling will be much greater the part feeling brawny and the skin tight. It generally results from some slight wounds such as a puncture or dissecting-room wound. The swelling will be soft and at first of a lighter color than the surrounding part. The chill will be more pronounced and the fever will go very high when the swelling will increase and the part

entire body. The redness which is intense will disappear under pressure but reappear immediately the pressure is removed.

There will be no return or filling under pressure.

The cause from which there will be a formation of small vesicles.

As recovery takes place and symptoms disappear the cuticle will desquamate.

In parts where there is much cellular tissue there is a tendency to resolve into the second or third form.

burning tingling character the part is very hot and of an intense fiery-red hue which has given it the name of "St. Anthony's Fire" - The area of inflammation is sharply defined, not fading off gradually into surrounding healthy tissues but abruptly terminating in the form of a line or two - This form has a tendency to wander from part to part - This spreading or migration will sometimes gain rapidly and may extend over the greater part of the body seldom, though, attacking the

may simultaneously occur.
Locally there will be the ordinary symptoms of inflammation: Viz- Heat, redness, pain more or less swelling with altered nutrition and impaired function of the part- The local symptoms will will present the characteristic appearance of the form of erysipelas present. In the cutaneous or simple variety the swelling is very little ammounting merely to an increased vascularity-
Pain is severe and of a

to be attacked by an erysipelatous inflammation. This may be followed by malaise, chilliness, febrile symptoms, furred tongue, bowels may be either constipated or relaxed.

These prodromic symptoms rapidly increase when a decided rigor followed by high fever may announce the disease. Then the local symptoms will make their appearance.

The above symptoms may be very severe or entirely wanting in which case the fever and local symptoms

the form of the disease.

I do not look upon these varieties of erysipelas as differing in their essential points save those of degree and modifications imposed by the constitution and condition of the patient.

The symptoms are both local and general not having a fixed ratio to each other, thus indicating the typhoid form of the disease with its local lesions. The first indication may be more or less swelling and soreness of the lymphatic glands about the area about

connection or relation between [illegible] and [illegible]. This is manifested by the fact that the [illegible] of the [illegible] [illegible] [illegible]

selection is at some point already weakened by disease or injury or is in some other manner rendered less resisting to the inroads of disease.

This disease is both highly contageous and infectious; though it is said to sometimes occur without any apparent possibility of the party being subject to infection. Thus indicating that it may possibly arrise from poisons generated within the body. There also seems to be some direct

Causes. The principle cause seems to be a minute organism, micro-coccus or germ which gains admission into the system either through some abrasion of the skin, or by means of absorption and thus through the circulation.

In the first instance the seat of the local inflammation being at the point of inception or in some weakened or injured spot very near to the point of entrance: whereas in the latter case the spot of

2nd That affecting the cellular tissues as a diffused cellular inflammation and known as "Diffused Cellulitis" or "Diffused cellular erysipelas"
3rd That form attacking both the skin and cellular tissues - called, "Phlegmonous" or "Cellulo-cutaneous erysipelas - It is also divided into two classes "Traumatic" and "Idiopathic" - The traumatic form supervening upon the reception of a wound: The extent of wound bearing no relation to the severity of the attack of erysipilas-

either "I draw near", in reference to the tendency of the inflammation to move from one part to another, or, "red skin", which is one of its most marked symptoms.

The former, I believe, is generally conceded to be the most probable derivation.

<u>Varieties</u> = Erysipelas is usually described in three forms: viz.

1st The form that effects the skin alone as a circumscribed, cutaneous inflammation, and known as "Simple cutaneous erysipelas".

Erysipelas -

Erysipelas is a contagious and infectious specific disease due to the presence of some blood poison such as a germ or minute organism -

Its effect is exerted on the lymphatic system -

The disease is manifested by intense inflammation, sometimes tending to suppuration, and high fever with profound systemic symptoms -

The name is derived from two Greek words meaning

F. H. Charles

1886

"The Physiological Chemistry
of Connective Tissues
Nervous ..... do,
and Proteids.

By

William Kroh.

Baltimore.

1886

Connective Tissues.

The connective tissue grouping of our histology is by general as very satisfactory. It embraces connective tissue proper, including white connective tissue and yellow or elastic tissue, Cartilage, Bone and Dentine. They belong to the same embryonic layer viz. Mesoblast. The mesoblast also forms the epithelium of vessels, kidney, testicle, ovary and serous membranes. Remarkable changes take place in a tissue during the activity of a living organism. We can recognize all the many embryonic life gelatinous tissue exists, although it is found transformed into connective tissue or fat at a later period. Cartilage in the embryonic state may take on the form of bony substance in the adult stage. Thus we see that in a typical organism a number of the connective tissue group in embryonic life is

subject to considerable variation. Connective tissues present many very important modifications in different situations, their function being to bind together contiguous parts of the body. Connective tissue exists as a strikingly abundant and characteristic in the early stages of development of the tissues. In connective tissue we encounter bundles of white fibrous tissue arranged in parallel rows and lying in close apposition, sometimes crossing one another so as to give strong support. Yellow or elastic tissue is present but less in amount than the foregoing. A ground substance is present which serves to bind the fibres together and to add general support. In the various kinds of Connective tissues viz. Tendons, ligaments & ligament sub stance we have the white and yellow fibrillae typically displayed. We can distinctly appreciate the preponderance of the white fibrillae in the tendons and

ligaments and the cords of yellow or elastic tissue
and other elements in the ligament and flood.
Upon treating the white fibres with conc. Acetic acid
they swell, become gelatinous and transparent.
Sometimes connective tissue is found imbedded in
cavities in the ground substance; these cavities at
times communicate by minute canals, so that there
is established a system through which liquid may
permeate; we have such an instance in the Cornea.
Pigment may be deposited in the protoplasm of the
Connective tissue. E.G.: In the outer layer of the Choroid.
Colorless blood corpuscles or cells have been de=
tected in connective tissue, they may have migrated
from the blood vessels or capillaries, or are the
offspring of cells which have thus migrated. The most
abundantly distributed form of connective tissue in the
adult contains as its principal anatomical element

[illegible] of white fibres. By [illegible] of [illegible] water, [illegible] [illegible] [illegible]

the Collagen of the white fibres undergoes solution and a network of elastic fibres remain. Collagen is the name given to the substance of which the fibrillae are composed. The remaining network is composed of an elastic substance and to which the term Elastin has been applied. Elastin offers great resistance to the action of chemical reagents. It is soluble in boiling solution of caustic Potash, in cold concentrated Sulphuric acid and in conc. Nitric acid. According to A. Ewald & W. Kuhne, Elastin is gradually dissolved when digested with Pepsine and Trypsine, the former being a better solvent than the latter. Mucin forms a small proportion of connective tissue proper and in decided larger quantity in embryonic connective tissue. It connects together the epithelium cells in the Epidermis.

Adipose tissue. Fat may occur in the animal body as fat cells or globules developed in

and supported by connective tissue or in a state of solution in the animal juices. The fat cell being originally identical with the connective tissue cell, undergoes a change later, resulting in the diminution of the cell protoplasm, through the agency of which, oily matter is deposited within the cell and a cell wall is developed which serves to contain its oily contents. The oily contents increase and increase according to the state of nutrition of the animal.

Fat cells develop with special frequency in areolar tissue in the subcutaneous areolar tissue and between the connective tissue which lie between certain viscera of the abdomen. In the fully formed fat cell there is no appearance of a nucleus; nevertheless the original cell protoplasm can be made prominent, when part of the oily contents of the cell is removed. The contents

[illegible] [illegible] [illegible] [

[illegible] plaster [illegible] [illegible] of [illegible] and glycerine is [illegible] free. Fats on account of this property are termed saponifying fats. Stearine is the chief constituent of the more solid fats and is nearly insoluble in cold alcohol and Ether. It dissolves in boiling Ether but is again precipitated upon cooling. Acids and bases convert stearine into stearic acid and glycerine. Palmitin is the more abundant of the two solid neutral fats in the adipose tissue of man.

Cartilage. Cartilage is composed of certain cells termed cartilage cells imbedded in the basic substance. Cartilage may be divided into four classes according to the predominating character of the matrix; first, Cellular Cartilage; second hyaline C. third, white fibro C. fourth, Elastic or spongy C. In the cellular

variety, the matrix consists of a very thin transparent envelope surrounding each cartilage cell; this envelope has the same chemical property as the matrix of hyaline cartilage. In the hyaline variety the matrix consists of a transparent homogeneous substance. In the white fibro cartilage the cartilage cell is surrounded by the capsule which lie imbedded in a preponderating mass of fibres identical with the white fibres of connective tissue. In the spongy or elastic variety the cells and their capsules lie imbedded in a meshwork of elastic fibres. In cartilage cells have one or more nuclei and a particular tendency to the formation of intercellular substance, which we see excellently depicted in cellular cartilage.

Chondrin is the name given to the product obtained upon subjecting the matrix of hyaline cartilage

[illegible] the [illegible] of the cartilage [illegible] to [illegible] boiling in water. According to the investigations of Korochowitz, Chondrin is to be looked upon as no pure substance but as a mixture of gelatin, mucin & salts.

Composition of Cartilage (Hoppe-Seyler)

In a young and healthy man.

	Costal Cartilage.	Articular cartilage from knee joint.
Water in 100 parts	67.67	73.59
Organic matter	30.13	24.87
Mineral matter	2.20	1.54

Inflammation of Cartilage.

The cartilage may become diseased by the extension of inflammation from the bone beneath or from the synovial membrane surrounding it. The subjacent bone may inflame and the granular tissue springing from it, may eat its way through the cartilage at different points or simply separate and loosen the adjacent cartilage from the bone; or the synovial

membrane which becomes thickened by a vascular round celled infiltration, sends processes inward over the surface of the cartilage and its cells penetrate the cartilage causing erosion. Cartilage may be by scar tissue, the adhesions being strong and wide. It is important to recognize the fact that there is no primary disease of articular cartilage, since pathological anatomy teaches that all diseases of its structure are secondary to some other affection.

Osseous tissue or Bone.

The bones are perhaps the least destructible of all parts of the organism and stand in the closest relationship to other connective tissue regarding their chemical composition. The external surface of the bone is richly endowed with nerves and vessels, the fibro vascular membrane, (periostrum). Beneath

the periostrum on the inner surface, is a [illegible] of [illegible] cells called Osteoblasts in virtue of which the membrane possesses the power of forming new bone.

The interior of bones is either hollowed out into a cavity termed medullary cavity or may be occupied by cancellated tissue. The larger vessels of the bone ramify in the haversian canals and each canal lodges but a single vessel. We can trace fine lines, leading out of the canals, which are called "Canaliculi."

Around the haversian canals the bony substance is arranged in concentric lamellae and in these lamellae are cavities also arranged concentrically, called lacunae. Thus the canaliculi serve to establish a communication between adjacent lacunae, between lacunae which are nearest the haversian canal and the canal itself. The mineral matter of bone is dissolved by dilute hydrochloric acid, leaving the bone

soft and pliable. Heat will destroy the organic matter leaving the mineral matter behind the bone remains light and fragile. The chief salts present in bone are Calcium phos. Calc. carb. Calc. chloride Calc. fluoride, Magn. phosphate, Sulphates & Chlorides; the latter two in small quantities. The following is the probable composition of the mineral matter of bone, according to the analyses of Zahrsky. [97.683 Part

Calcium phos.	83.889
Calc. Carb.	13.032
Calc. in combination with fluorine, chlor. and Organic acids	0.350
Fluorine	0.229
Chlorine	0.183

In the red marrow which is lodged in the cancellated tissue, cells resembling the white cells of the blood and coloured corpuscles of the blood of the Embryo have been detected. This fact has induced many histologists to look upon the red marrow

of the bone is assumed in the transformation of the colored cells of the blood.

Effects of disease upon bone

Osteo malacia. The inorganic constituents of bone are gradually diminished and in some instances entirely removed in this disease. The animal matter undergoes marked structural alteration. Some observers attribute the cause of this morbid change to the presence of lactic acid.

Rickets: A morbid process in which the bones during their period of growth expand at their epiphysial ends, due to an abnormal proliferation of cartilage cells. The shaft becomes distorted. The distortion is said to be due to a deficiency of earthy salts. The lactic acid theory is also put forth as a cause; although this theory is based upon very unsatisfactory basis. Caries: Caries may be regarded as an

unhealthy inflammation of bone, chiefly of cancellous tissue, characterized by swelling and the formation of an abscess. It may or may not be associated with syphilis or struma. We are indebted to Becquerel & Rodier for the following view of the composition of the bone in Caries.

	Metacarp. Bone.	Femur affected with Caries.	Lumbar vertebra of a woman. aet. 40
Calc. phosphate			
" fluor.	49.77	51.53	44.05
" carb.	7.24	5.44	3.45
Magn. phos.	1.11	3.43	1.02
Other salts	0.30	0.91	1.70
Collagen	37.97	35.69	41.42
Fats	3.61	3.00	8.36
	10.0.00	10.0.00	10.000

According to the above statement the mineral constituents are less proportionately than in healthy bone.

Necrosis. In this state the function of the part affected is arrested, due to the interference with the supply of nutriment; the more impaired the nutriment of the part which becomes the seat of an inflammatory process, the more likely is this to

cause its death. The organic matter is gradually removed. Analysis of necrosed bone by Von Bibra.

Collagen in 100 parts	19.58
Fats	1.22
Calc. phos. little	
" fluor	72.63
" carb	4.03
Magn. phos.	1.93
Sol. salts	0.61

Teeth. Teeth consist of phosphate and carbonate of Calcium, Magnesium phosphate, Calcium fluoride, soluble salts and some organic matter. They present for examination several tissues, viz. Enamel, Dentine and Crusta petrosa or Cementum. In the interior of the tooth we have the pulp cavity which lodges the pulp and blood vessels. Nerves are distributed through out the pulp. Dentine and crusta petrosa belong to the group of Connective tissues; the enamel is a modified Epithelial structure. The epiblastic cells which give rise to the enamel organ dips downward

and caps the modified connective tissue corpuscles (odontoblasts) which encircle the surface of the papillary protrusion, which rises from the connective tissue of the buccal mesoblast. Dentine is distinctly mesoblastic in its origin being formed through the agency of certain cells termed odontoblasts and forms the principal mass of a tooth. The pulp cavity is bounded on all sides except the openings of the fangs, by dentine. Upon close examination, dentine is found to consist of fine tubes (the dentinal tubules) imbedded in a homogeneous matrix. The tubules in their course divide and subdivide dichotomously. When teeth are treated with dilute acids the mineral matters are dissolved out and a structure which has been termed dentinal sheath is found to exist around the lumen of the dentinal tubule. The dentinal sheath resists the action of acids

and has similar properties to the yellow elastic tissue. The dentinal sheath is found to contain a fine fibre called the dentinal fibre, which proceeds from the pulp. If we weigh the substance which constitutes the dentinal sheaths, dentine and bone are found to be nearly identical, both consisting of a collagenous organic basis in which are deposited mineral matter. Dentine impregnated with salts is the result of the activity of those connective tissue cells which we term odontoblasts, even so as the ground substance of bone proper was originally formed through the activity of those connective tissue cells which we call osteoblasts. Dentine contains as its chief mineral ingredient Calcium phos. and the proportion of Carbon dioxide is greater than in bone.

Enamel. The enamel covers the crown of the tooth

and is the [illegible] of its tissues. In the adult condition enamel is composed of minute hexagonal prismatic rods, which lie parallel with one another, resting with one end on the dentine and the other radiating outward.

Few analyses of enamel by Hoppe-Seyler showing the probable mineral constituents of recent and fossil teeth.

	New born child I	II	III	Horse	Fossil Elephant
[illegible] PO_4	75.94	82.40	82.81	93.40	91.03
Ca. Ca		0.23		0.66	0.44
Mg. H PO_4	2.16	2.37	1.50	1.68	2.75
Sol. Salts & Org matter	22.29	0.35	15.40	4.74	
		15.59			4.54

Crusta petrosa or Cementum.

This is disposed as a thin layer on the roots of the teeth covering the dentine. It is developed from the periosteum which covers it. In structure and chemical composition it resembles bone and contains lamellae, lacunae, canaliculi and occasionally

haversian canals which characterizes true bone.

Nervous tissue. The nervous tissue of the higher animals may be classified in the following manner. First: The great central mass inclosed in the skull and spine called the cerebro spinal system including the brain, spinal cord and the various peripheral and sporadic ganglia.

Second: The conducting nerves, their office being to transmit influence from one region to another, connecting the central organ with the

Third. Endorgans, wherein certain nerves commence (afferent) and those of certain of the other terminate (efferent). The nervous tissue is composed chiefly of two different structures; the grey and the white matter. The grey substance which constitutes the external layer of the brain, various internal deposits near its base, a great part of the

spinal cord, various ganglia and intermingling with the fibrous nervous substance, contains as one of its chief anatomical elements, the nerve cell. The nerve cells have a direct or indirect relation with the nerve fibres. They are irregular, round masses of protoplasm, with a large distinctly marked nucleus and nucleolus and are especially distinguished by their processes and narrow off shoots.

The peripheral part of the nerve cell exhibits a striated appearance, similar to that exhibited by the axis cylinder of the nerve. The number of processes of the nerve cells vary in different parts of the body and are especially numerous in the spinal cord and are hence called multipolar cells. It has been noticed that of the many processes given off from the cells, one is distinguished from the rest by its much greater thickness and length

and dendrons continuous with the ordinary nerve fibre. Some of the other processes terminate in fine transparent fibres which become lost and anastomose freely with the other elements of the nervous tissue, giving rise to a net work from which arise probably the axis cylinder of other nerve fibres. Very little is known of the composition of the nerve cells; nevertheless it has been maintained, that they are in the main protoplasmic in composition and are thus especially rich in proteid matter. The gray and white matter is supported by a connective tissue framework termed neuroglia. Both are supplied with blood vessels, although the gray matter is much more vascular than the white. The white or fibrous matter constitutes a great part of the brain, spinal cord and nerves in general. We may conveniently divide nerve

fibres into two classes. First, the Medullated
Second, the Non-medullated of which the former
is much more abundant. The medullated variety
when fresh presents a highly transparent envelope
termed tubular sheath or neurilemma which when
stained with nitrate of silver is seen to consist
of incrated Endothelial cells. The medullated
nerve fibres are distinguished by the absence of
a medullary layer; they consist of an axis
cylinder sheathed in a nucleated neurilemma.
The neurilemma may be absent from both the
medullated and non-medullated nerve fibres.
Kuehne maintains that the transparent membrane
which forms the wall of the nerve fibres, has a
close resemblance to the sarcolemma of muscular
fibres. The neurilemma appears to become con-
tinuous with the sarcolemma upon its entry

into a muscular fibre. Neurilemma and Sarcolemma upon prolonged boiling with water yields gelatin. The axis cylinder is held to be of a soft solid consistence during life and presents the appearance of a nearly cylindrical granular cord exhibiting marks of fibrillation. It is stated that about one half of the solid contents in the gray matter and about one fourth of the white matter of the nerve centres consist of protrid substance.

Neurokeratin. This substance so called by Kuehne and Ewald is contained in the medullated nerve fibre, and in the gray matter of the nerve centres.

The crystallizable phosphuretted fat Protagon was discovered by Liebreich. He regards Protagon as a definitely anatomical constituent of the brain. Diacanoff and Hoppe-Seyler deny that any such definite substance exists; they maintain that Liebreich's

protagon is simply a mixture of two fatty bodies Lecithin & Cerebrin. Diacanow believes the neo-proximate principle Lecithin to exist in the brain. The neo body Cerebrin (a non phos. nitrogenized body) is the result of Müllers investigations. The non-nitrogenized body Cholesterine is also described as one of the chemical constituents of the nerve tissues.

Proportion of water in the gray and white matter of the brain. The following are observations made by Weisbach on the brain of men.

Proportion of water in 100 parts.

	Age 20-30	Age 30-50	Age 70-94
White Subst. of the brain	69.56	68.31	72.61
Gray " " " "	83.36	83.60	84.78
Cerebellum	78.83	77.87	80.34
Pons Varolii	73.46	72.55	72.74
Medulla Oblongata	74.43	73.25	73.62

The central organs are decidedly more vascular than the nerves E.G. the activity of the respiratory centre and the mental faculties depend wholly upon

the oxygen furnished by the blood. We also find nerve fibres are less influenced by a lack of oxygen than the central organs.

Chem. Changes. As a result of long activity or death, the acid cylinder of a nerve changes from an alkaline to an acid reaction. The gray matter of the brain has an acid reaction even during life and no change at death. When a nerve is cut across its function is suspended, but union may soon take place and the function restored, if the ends are brought together.

Proteids. In the active living cell whether it be animal or vegetable we recognize an organic proximate principle, it is the proteid or albuminous body. This proteid substance according to the latest investigations seems to be essential to the primordial structure of animal and vegetable matter.

Proteid matter in animal life is drawing more striking attention than the proteids of vegetable life, in virtue of the greater proportion of proteid matter of its whole organism and we may affirm of the proteids, that they are an absolute requisite number of every living active animal tissue and that they are indisputably concerned with every manifestation of animal activity. The organic constituents may be divided in two principal groups, they consist of nitrogenized and non-nitrogenized matter. In the nitrogenized group we have proteids and their

modification, embracing serum albumen, egg albumen, Casein, Paraglobuline, Fibrinogen, Myosin, Syntonin and Peptone. The non-nitrogenized group of hydrocarbons consist of sugars, starch, Glucose, Lactose, Saccharose, Glycogen, Fats and Cholesterine. According to the view of the best authorities, protrids consist of the compounds of Carbon, Oxygen, Nitrogen & Sulphur. Proteid substance when taken as food is acted upon by certain ferments in the alimentary canal and converted into a closely allied body called peptone which is immediately absorbed and is capable of reconversion into protrids. Solutions of protrids are non-diffusible through the septum of a dialyser, hence they are colloids. Proteids when dissolved rotate the plane of polarized light to the left; this fact when the body rotates the plane of polarized light in a definite direction

and to a definite extent is of great moment in its recognition and in enabling its amount to be determined. Proteids are for the most part soluble. Some exist in a state of solution in the liquid of the organism & others are present in the same state in the tissues. The following table, by Gorup. Besanez, presents the proportion of the protrids and their immediate derivatives, contained in the various liquids and solids of the body.

A.		%
Cerebro spinal fld.	contains	0.09
Aqueous humor	"	0.14
Liquor Amnii	"	0.70
Intestinal juice	"	0.95
Liquor pericard.	"	2.36
Lymph.	"	2.46
Pancreatic juice	"	3.33
Synovia	"	3.91
Milk	"	3.94
Chyle	"	4.09
Blood	"	19.56

B. Solid tissue	%
Spinal cord contains	7.49
Brain	8.63
Liver	11.74
Thymus of Calf	12.29
Muscles	16.18
Tunica med. of Arts	27.33
Crystalline lens	38.30

[illegible] with the aid of [illegible] protrids in all

proportions. They are insoluble in the stronger acids alcohol and in ether. Protoids dissolve in nearly all very dilute acids and become insoluble when excess of the acid is present. Protoids may be precipitated from any of the acid solutions by ferrocyanide Potassium, Tannin various metallic salts and by alkalies.

<u>Tests for protoids in solution.</u> By adding strong nitric acid to the solution until it is strongly acid; (previous boiling not essential) if a white precipitate occurs we may suspect protoids. If only slight tracers of protoids are present we may resort to the more delicate test of Millons. Viz " By the action of a strongly acid solution of Mercuric nitrate upon the suspected liquid; if the slightest trace of a protoid substance is present the liquid assumes a characteristic purple red color. The xantho proteic test is a very valuable one. It consists in boiling conc.

Nitric acid with any solution containing proteid substance or any of its modifications as a result a bright yellow precipitate takes place, which changes to an amber red colour on excess of an alkali is added to it. We obtain acid albumin by the action of dilute acids upon a solution of a proteid, as is distinctly shown in the action of gastric juice upon proteids. Alkali albumin or alkali albuminate is obtained by the action of dilute alkali upon the proteid. Caseine which constitutes the most important ingredient in the milk of mammalia is a fair representative of a proteid substance. Fibrine a representative proteid substance is insoluble in water, alcohol and Ether; it swells up in cold hydrochloric acid of 1%. When it is in this swollen state, it is readily dissolved by the pepsine ferment. The method of determining the exact composition of a

[illegible] is [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible]

any intermediate substances of which we know very little, although it is quite certain that leucine, tyrosine and other bodies are formed and it is very likely that non-nitrogenized bodies viz. carbo-hydrates and fats may take their origin in the decomposition of proteids. The proteid matter of a living cell is being continually decomposed without any special influence from without being brought to bear upon it. The proteids which we consume as food after undergoing molecular change in virtue of the organizing cells, become subject to the influence of oxygen.

Syphilis.

Archibald McKinnon
Baltimore Md.

Jan. 1st 1886.

" " " "

Syphilis.

Definition.- It is a contagious, constitutional disease, dependent upon a specific virus, and is also accompanied by local lesions. It is acquired only by direct contact, though it may be inherited. It affects usually the external genital organs, as they are more frequently exposed to the liability of becoming infected as it is in the sexual act. Persons are usually inoculated, but the virus will manifest itself wherever it comes in contact with mucous membrane or abrasions of the skin. It is not peculiar to any race, age or sex but all are equally susceptible when exposed to the influence of the virus.

History.— The origin of the disease is unknown. It seemed first to have attracted attention in the latter part of the Fifteenth Century during the campaigns of Charles VIII of France. Though it is impossible to determine any definite period at which it originated. As in all Contagious and infectious diseases the question naturally arises, How did the first case occur? Which must be answered as in similar affections, that it is not known and especially so in this case as we do not know when the first case occurred.

Etiology.— The only cause which can produce the disease is the Specific Virus and without its presence

there can be no Syphilis. The manner in which this contagion occurs more often than any other is in sexual intercourse, in which act the virus comes in contact with the mucous membrane of the genital organs of either male or female and thus produces the lesion which first occurs known as chancre.

There are various other ways by which it may be transmitted from person to person, as by kissing one who has mucous patches upon the lips, by using towels previously used by those similarly affected, or by examining a syphilitic sore if there is any wound, however slight, of the fingers. The last is

the great danger to which Physicians and Surgeons are exposed and we should always be very careful, when it is necessary to make such examinations, to examine the fingers first and afterward to thoroughly cleanse them. If there is any wound of the fingers such examinations should not be made for, beyond a doubt syphilis will be the result if the virus comes in contact with such a wound.

Pathology. The lesions occurring during the course of Syphilis belong to the class of infective granulomata. They are inflammatory in character and in their seats and distribution are quite characteristic of the

disease. The lesion first noticeable is the chancre with its indurated base. That of the secondary stage is the general glandular enlargement, the eruption, the Alopecia and mucous patches.

Those of the Tertiary stage are those of bones, viscera and the nervous system These are results of inflammatory processes caused by the syphilitic poison. A person affected by mucous patches of the mouth can easily inoculate one by using their saliva instances of which have occurred. I saw a patient in a clinic given by Prof. A. Knison at Bay View Asylum who had been inoculated in this way by one prick of a tattoo needle the ink on the needle

having been moistened by the saliva of a man suffering from mucous patches. When I saw the patient the disease was in the tertiary stage, and he claimed that he had never had any sore on his penis.

The Liver is one of the most frequent seats of syphilitic lesions. Fibroid and gummy deposits develop in its substance and it is often seen to bear cicatrices causing a puckering of its substance in its vicinity. This organ also frequently becomes lardaceous from syphilis. Various other organs of the body are affected but so nearly resembling those taking place in the liver they need no special description here. Viz: Scars, fibroid induration and deposits.

Signs and Symptoms: Primary Stage.
The chancre is the first manifestation of the disease which is an ulcer of variable size and is usually single, though this is not invariably the rule. The period of incubation varies from one to nine weeks. It is recognized by having an indurated base, edges sloping from periphery toward the center and furnishing a scanty serous, usually, nonpurulent secretion, and is adherent to subjacent tissue. It is nonirritating and is self limited and rarely becomes phagedaenic and is strictly a manifestation of a constitutional disease. After chancre heals a cicatrix is left, more or less depressed according to the depth of the ulceration which had oc-

cured. A chancre in certain situations may be converted into a mucous patch instead of undergoing cicitrization. This is most often seen where mucous tissues are in direct contact accompanied by friction as on the lips, tongue, labia and folds of the anus. This change occurs when the repair of the chancre has been nearly completed by granulation and consists in the formation of a white membranous pellicle which gradually spreads from the circumference of the sore to the center.

Bubo is also a sign of primary syphilis. This is an enlargement of the lymphatic glands in the neighborhood of the sore, and as that

is usually on the external genital organs the inguinal glands are affected. The development of the bubo coincides pretty closely with the induration of the chancre. The glands of both groins are attacked simultaneously generally. They are hard, movable upon each other, painless and about the size of almonds but one is frequently larger than those which surround it. The bubo has no tendency to suppurate. Its duration is variable, lasting longer than the induration of the chancre and in many cases remains quite distinct for six months or one year after contagion. The bubo, however, is not an invariable sign of Syphilis for we may have it with

chancroid or from any urethral irritation hence it can not be taken as a positive sign unless accompanied by general glandular enlargement. No definite line can be drawn between the Primary and secondary stages. The Secondary Stage is characterized by history of having had chancre and the occurrence of the eruption, sore throat mucous patches, general glandular enlargement, Alopecia and frequently iritis. There are symptoms which may precede this stage lasting from a few days to a week or longer, of which febrile disturbance, languor, pain of a neuralgic character, especially cephalgia, and, in women especially, there is Anemia.

These symptoms disappear on the occurrence of the eruption and other phenomena peculiar to this stage of the disease. The average period at which this stage comes on after the appearance of the chancre is five or six weeks, rarely later than the sixth month. There is no definite syphilitic eruption, but a variety of skin affections may be present and possibly in the same patient, it however has the characteristic copper-colored areola. It appears first on chest and upper extremities and face and may extend over abdomen and legs; but is not so often seen upon the lower extremities. Usually it does not itch which has been attributed to anaesthesia of the skin

The sorethroat is an erythmatous eruption of the fauces, tonsils and tongue. Mucous patches are infallible signs of the secondary stage of the disease. They appear upon mucous membrane where it joins the skin and where friction is kept up. They may also occur where skin is thin as upon the buttocks, around vulva and on the scrotum. They appear as slightly elevated papules of variable size from 1/8 to 1/2 an inch in diameter and covered with a fetid discharge. They produce great deal of irritation and discomfort and are very annoying. These are probably more often seen in females than in males. The general glandular

enlargement is nearly always present. Those most easily recognized are the inguinal and cervical.

Alopecia is almost universally present but often so slight as not to be detected. The hair of the head, beard and eyebrows, may fall out but it is most marked in the hair of the head. This is an early sign of this stage and is amenable to the proper treatment.

The iritis occurring in this stage is often very annoying but as iritis may be the result of Rheumatism it is not of very great diagnostic value but must be rigidly differentiated from the Rheumatic iritis that we may institute proper treatment.

There occasionally occurs an acute inflammation of the external ear which may cause permanent deafness from inflammatory thickening of the part. There may occur various derangements of the nervous system. Hemiplegia preceded by headache, mydriasis, and perhaps ptosis which may cause complete loss of consciousness. It has been also noticed that syphilis is often the cause of Posterior Spinal Sclerosis and when this is the cause the prognosis is always better as if we cure the syphilis the sclerosis will also be cured. Urethral, Vaginal and uterine discharges often occur without appreciable cause and may be a source

of contagion.

Tertiary Stage.- After the subsidence of the Secondary there may be an interval before the development of the tertiary symptoms which is of no definite length, it may be several years or the symptoms may follow so closely those of the secondary stage that no distinct line can be drawn between them. In this stage almost any tissue or organ of the body may be affected.

It is called the stage of deposit as it is marked by deposit, in various parts and organs of the body, of new material which may take the form of contractile lymph or of a soft gummy substance constitu-

ting the gummatous syphilitic tumors.

The cutaneous manifestations of this stage are tubercular or squamous with a destructive form of Rupia. The tubercles may be dry or ulcerative and occur most often on the face, they appear as solid cutaneous tumors with indurated base, they are frequently developed in the hair follicles and are often arranged in a circular form. If resolution occurs, they leave depressed cicatrices in the skin.

The severest form of alopecia occurs in this stage which involves and destroys the hair follicles all over the whole body. Onychia is often present especially around toe-nails.

The tongue often is covered in part by white patches on its surface due to lymphy deposit which may be mistaken for epithelioma. A destructive form of ulceration occurs on the tonsils, fauces and palate destroying the surrounding tissues and materially impairs the voice and deglutition great dyspnoea may supervene and finally require Tracheotomy for its relief.

In the iritis of this stage the iris is primarily involved and a yellow lymphy deposit forms in its substance. The solid viscera such as the Liver, Spleen, lungs and Kidney very often have the characteristic deposit into their substance.

The one most frequently thus affected is the liver. The brain and spinal cord may suffer from this deposit also, it may be in their substance or only in the membrane, causing Epilepsy, Paralysis and possibly absolute dementia.

Syphilitic periostitis is more often seen in bones which are subcutaneous by forming gummy deposit beneath the periosteum and is called a node which is hard and resisting but may fluctuate. It produces a chronic osteitis leading to hypertrophy and caries or necrosis. These nodes are most generally seen in the skull and jaws and may cause severe cerebral disturbance.

Congenital Syphilis.— This is a form of the disease which is present in the infant at birth or soon after rarely occurring later than the third month. It is transmitted from the parent or parents of the child. If only one parent has syphilis the child may escape contagion, and cases occur in which part of the children of a family have the disease while others escape, but if both parents are syphilitic the probability is that all the children will be affected. A child born of syphilitic parents is small and has an appearance of emaciation at birth or on the other hand it may be robust and apparently in

good health but in a short while will begin to show the ravages of the disease upon its general health and characteristic lesions present themselves. These appear on the thighs, buttocks and mouth usually. If a woman have syphilis, and become pregnant, she rarely carries her child to full term but either aborts or miscarries and in repeated miscarriages we may suspect syphilis. Again she may carry it to full term and the child be born dead when the skin will be broken over the childs body or large blebs be present. A mother who gives birth to a syphilitic child can nurse it with impunity even if

the child have mucous patches in its mouth and she have fissured nipples, while if a non-syphilitic woman ~~nurse~~ nurse the same child under similar circumstances a chancre would be the inevitable result. Coryza is often a prominent and persisting sign of the disease and so also is onychia. The early symptoms may subside and others occur after the third or fourth year. The most noticeable of these is the appearance of the permanent incisor teeth which are rounded and peg-like and the enamel is notched at its free extremity. This is most marked in the incisors of the upper jaw and is often absent

in those of the lower jaw.
We may have enlargement of the bones, and possibly nodes of a true character may form. Various other phenomena occur which naturally lead us to suspect the disease and should be investigated at once.
Diagnosis.— To diagnose primary— syphilis is not always an easy task. To do this we must differentiate from chancroid. Chancroid is a form of ulcer which is highly contagious and appears on the genital organs, it may originate from uncleanliness of these organs. It is transmitted from person to person during the sexual act if either have it. This may often give trouble in making a diagnosis of chancre if not

very rigidly examined and it is of extreme importance that the diagnosis should be made early as the chancroid is purely a local disease and yields to local treatment, while the chancre is invariably the sign of a constitutional disease.

The chancre is solitary, has a distinct period of inoculation and is <u>not</u> autoinoculable. The Chancroid is multiple, has no distinct period of inoculation and <u>is</u> autoinoculable. Chancre is a superficial ulcer with hard, elevated, sloping edges furnishing a scanty serous, nonpurulent secretion and is adherent to subjacent tissue.

Chancroid is an excavated ulcer with sharply cut edges furnishing a copi-

ous autoinoculable pus, and is not adherent to subjacent tissue.
The chancre has an indurated base.
The chancroid has no indurated base, except from extraneous causes, and then only a temporary inflammation.
Chancre tends to heal, rarely becomes phagedaenic; bubo invariably present, and is bilateral, polyganglionic and does not suppurate nor furnish an autoinoculable pus.
Chancroid has little or no tendency to heal and liable to become phagedaenic.
Bubo not usual but when it is, it is monolateral and monoganglionic, apt to suppurate and furnishes autoinoculable pus.
The bubo appearing in this stage

is of advantage in diagnosis as it differs from that appearing with chancroid.

The signs and symptoms of value in the diagnosis of the secondary stage are the prodromic symptoms, febrile disturbance, cephalalgia and lassitude. The characteristic copper-colored areola surrounding the eruption, the alopecia, mucous patches and general glandular enlargement are, we might say pathognomonic. The history is of benefit but can not always be obtained nor relied upon when received. The eruption occurs five to six weeks after the appearance of the chancre or later but rarely later than the sixth month and the eruption does not itch.

The Rheumatic pains which accompany this stage are more severe at night. In the tertiary stage we are often compelled to rely chiefly upon the history of the case. We must ascertain if he has had alopecia, sore throat, chancre, and the nocturnal pains. The destructive form of alopecia occurring in this stage involving the hair follicles of the whole body, the iritis in which we find a lymphoy deposit in the substance of the iris and often a sore throat involving the larynx, hard palate and nose, possibly destroying these parts, are all of value in confirming our suspicions. If a Post mortem be held on a patient dying in this stage the characteristic lymphoy deposit will be found in various parts.

Prognosis.— It was a long time believed by the medical profession, and is yet by some, (I hope but a few) that Syphilis was an incurable disease, but, Thanks to the studious scientific men of our profession, we are no longer left to grope in the darkness on this very important points, as they have by untiring energy and scientific experiments ~~[illegible]~~ placed at our disposal remedies with instructions for their use by which we can completely and effectually eradicate the disease from the system.
Thus they have done an inestimable good for the profession and the laity and prevented the latter, to a certain extent, from being drugged by the many and inefficacious nostrums

of "Quack" ad nauseam. If the treatment is begun at an early stage and carried out properly a cure can be promised. The time required to effect this is variable usually ranging from six months to two or three years. Treatment must be kept up for quite a while after the symptoms have disappeared. The physician is often placed in quite an undesirable position by being consulted by his patients in regard to matrimony, and if there is one position in the whole career of a medical man in which he should use the utmost caution it is in such cases as these. He should remember that the offspring of his patient will form a member of the rising generation and should give his advice so as

to feel he had done his duty to all parties and to do this he should not permit his patient to marry until all signs of the disease have disappeared and, at least two years have elapsed since the appearance of the initial lesion, the patient having been under strict antisyphilitic treatment during the whole time. It is supposed by some that when a person once has the disease they will never have it again even if they are exposed to the virus which is not true for if a patient is effectually cured and be exposed to the virus he will undoubtedly have syphilis. But if he is not perfectly cured, then if he be exposed he will not contract the disease the reason of which seems very simple.

Treatment.— As the disease is purely a constitutional one it naturally follows that constitutional treatment must be pursued and it must be persistently carried out and prolonged. Mercury is undoubtedly the best and most efficacious remedy we have, at our disposal, for the disease.

The time to begin the administration of mercury is as soon as we make an undoubted diagnosis of syphilis. It is recommended by some to begin administering mercury on the appearance of any sore on the genitals when there has been any possibility of contagion. This is not a good plan as it is very difficult to make a positive diagnosis of the disease in the primary stage, and as the mercury will prevent the

appearance of the secondary symptoms we will be in doubt as to whether our patient had syphilis or not and possibly dismiss the case imperfectly treated. Then it is advisable, always to wait until an unmistakable diagnosis is made which can not usually be done until secondary symptoms present themselves even if but very slight. Then we know what we have to deal with and under the prognosis accordingly.

Method of administration of mercury.

The most generally employed is that by the mouth. That form is used which best agrees with the patient but the one mostly employed is the Hydrargyrum Chloridum Corrosivum in doses of gr 1/30-1/20 three times a day. The Pil. Hydrarg. may

be used in doses of gr ½ to 2 three times a day. The Hydrarg. cum Creta may also be used. The preparation used must be decided by the effects it has upon the patient. Some are more susceptible to certain preparations than others. The success of our treatment depends altogether upon the manner in which the remedy is administered, for it can be given so as to do harm. The sole object of the treatment is to keep the patient constantly under the influence of the drug but not to influence the patient as to attract his attention by any effect the drug may have. To do this a small dose must be given. As in all other diseases we should not adhere too closely to a routine treatment but it should be varied

to suit each individual case.
The following is a good formula:-

℞

Hydrarg. Chlorid. Corrosiv. gr ij
Tinct. Opii gtt XL
Aqual ℥ iv
M. Sig. ℥ i T.D. —

The object of the opium being to prevent any purgative action the mercury might have.
Treatment by inunction with the Ungt. Hydrarg. is occassionally used rubbed on the thighs, inguinal region &c, but the chief use of this method is in Congenital syphilis.
In obstinate cutaneous affections of the secondary stage treatment by fumigation often proves of value.

The patient being placed in a suitable framework, covered with oil-cloth extending from the neck down to the floor, steam is introduced, together with the fumes derived from the slow volatilization of a drachm or two of calomel or of the Red Oxide of mercury, by means of a tin plate heated by a spirit lamp. Apparatus of various kinds have been invented by which this can be done better than by the above method.

The use of mercury by the hypodermic method has been successfully resorted to and can be used when other means fail or are contraindicated. The corrosive chloride may be used in this way in smaller doses than by the mouth.

When the disease has reached the tertiary stage Iodine in some form is to be used. The Iodide of Potash may be prescribed with the mercury to form an iodide or one of the iodides of mercury may be given. The Hydrarg. Iodid. Rubrum in doses of gr 1/32 to 1/12 three times a day. It should be prescribed in alcohol or solution of Pot. Iodid as it is insoluble in water. With the Mercury and Iodine good food, plenty of exercise and if necessary tonics should be given the best of which are Iron, Quinine, Strychnia and Cod Liver Oil. In all cases the medicine must be varied to suit the condition of the patient.

The chancre is self limited and needs but little, if any treatment We can not eradicate the disease by removing the chancre with subjacent tissue by means of the knife, cautery or any other known means. It should be kept perfectly clean by use of soap and water and may be sprinkled over with Iodoform or equal parts of Calomel and Subnitrate of Bismuth and it rarely requires any further treatment.

The chancroid can be cured by the application of caustics, but this is seldom necessary unless it becomes phagedaenic when Nitric acid may be used. Iodoform and Oakum dressing is good.

As prophylaxis is of paramount importance the patient should be informed as to the precise nature of the disease as regarding its highly contagious character, its course and possible duration. by so doing we may in many cases prevent further spread of the disease.

The treatment of Congenital syphilis requires prompt attention. If a diagnosis of syphilis is made in a pregnant woman treatment should be begun at once so as to exert a good influence upon both mother and child.

Inunction is the chief method of using the mercury in this stage of the disease. It should either be rubbed over portions of the child's body daily in different regions or placed upon a flannel band

to be worn around the child's body.
The ointment should not be used on same region successively but placed upon different regions of the body. It can be used on inner surfaces of the thighs or abdomen &c. successively.
The child at the same time should have good easily digestible diet, tonics, fresh air, sunshine and general good hygienic surroundings. Particular care should be taken of the child while in this depraved condition of health, for the least exposure to cold &c will or may cause some serious affection to spring up.
A child suffering from syphilis should not be allowed to nurse any other woman except its mother for fear of infecting the non-syphilitic woman.

In the treatment of the various stages and forms of syphilis one of the things we should strive not to do is to produce salivation by too free use of the remedy. Upon the slightest sign of salivation occurring, such as sore teeth, fetid breath and increase flow of saliva, the dose should be lessened or altogether withdrawn for a few days. If salivation should occur it should be treated by washes of Pot. Chlorate or Tannic acid or if very profuse Atropinae Sulph. may be used in doses of gr 1/100. The common syphilitic sore throat can be treated also by the above washes advantageously.

Respectfully Submitted
Archibald McKinnon

Preface.

In choosing my subject for a thesis, I am well aware of my incompetence of doing it justice.

Every branch of medical science has been so thoroughly investigated and written upon, that it seems impossible to add anything new to the already vast amount of accumulated material.

To the beginner in the study of medicine it is still more difficult, since it is impossible

for time to traverse the whole, and
field of medical literature in
the brief time allotted mine, and
in propounding, what to him
mind are new theories, he is
in danger of unearthing
ones, which are old and have
long since been condemned.

In the choosing of "Respiration"
as my subject, I was strongly
prompted by the thought that
there is no tissue within the
human body which is not
there to serve some purpose;
and as there is a tissue, con-
cerned in respiration, which
seems to be very much neglected,

I come forward in its defence.

I do believe that there is ample reason for supposing that the circular muscular fibres of the "ultimate bronchial tubes" are of some importance in respiration.

In the neurosis known as asthma, we have a condition of contraction of the "ultimate bronchial tubes" during inspiration, forming an impediment to the diffusion of air within the lungs by diminishing their calibre, and, as I believe, by robbing diffusion of one of its most valuable aides, i.e. the contraction of it.

muscular fibres upon the contained air during expiration. The theory of a nervous supply somewhat similar to that of the transition arteries, and regulated by the respiratory centre is not impossible, though of course I am unable to demonstrate it.

In the reading text books I have found nothing that would go to disprove the theory. In conclusion I would say that the time at my command for the preparation of this thesis was so limited that I could not enter upon the subject as fully as I could wish.

The [illegible] consulted are: [illegible] and Foster's Physiologies; Wilson and Gray's Anatomies; and my notes on lectures delivered in the University of Maryland.

Balto. Dec. 28. 1885. W. F. Wegge

Respiration.

Respiration consists in the process by which oxygen gas is taken into the substance of living organisms, and the changes which accompany or follow its introduction. (Dalton)

The organs of respiration are the lungs, which are two conical bodies, situated one at each side of the chest, and separated from each other by the heart and by an interspace called the mediastinum.

The respiratory tract begins with the larynx, communicating

with the pharynx through the
glottis. Then follows the la-
rynx, which divides into the
right and left bronchus. These
bronchi dividing and sub-
dividing, until finally reduced
to a diameter of 1.3 millimetre or
less, and are then known as
"ultimate bronchial tubes."

The trachea and larger
bronchial tubes are membran-
ous with cartilaginous rings.
As the bronchi decrease in
size the cartilaginous rings dis-
appear and the tubes grow
more delicate in structure,
retaining the fibrous and

muscular tissues.

"The muscular fibres belong to the non-striated organic muscles; they are arranged in rings around the tubes." "The elastic fibres, arranged in longitudinal fasciculi, form a stratum next the mucous lining," "and scattered fibres are found around the intercellular passages and air-cells."

These "smaller bronchi in which the cartilaginous rings are absent, are capable of considerable expansion and contraction by virtue of their elastic and muscular tissues."

Each "ultimate bronchial tube"

terminates in a "pulmonary vesicle" which consists of a membrane in the form of a sac, which is divided into a number of incomplete cells or alveoli.

Each cell or alveolus is surrounded by "capillary blood vessels, which penetrate its partition walls and are thus exposed on both sides to the influence of the air in the pulmonary cavities."

All of these structures are bound together by fibro-elastic tissue. The nerves of the lungs are derived from the pneumogastric nerve and from the sympa-

the circulation. The blood is conveyed to the lungs, where it is aerated, by the pulmonary artery, and returned through the pulmonary veins. The blood for their nutrition is received through the bronchial arteries.

Inspiration and Expiration.

Inspiration is effected by the enlargement of the cavity of the chest, which is by means of the diaphragm and external intercostal muscles. These muscles contracting, depress the abdominal organs and

elevate the ribs. In forcible inspiration other muscles which tend to enlarge the chest come into play.

The muscular fibres surrounding the "ultimate bronchial tubes," probably are in a relaxed condition.

In normal inspiration in the adult male the diaphragm performs most of the work, while in the adult female the intercostals perform the chief amount of work.

In children there is no distinction in this regard, but as the female child

advances to puberty, the mode of respiration is changed, as if in anticipation of the special function of her sex — child-bearing.

There is some difference of opinion as to the chief cause of expiration; some holding the view that the elasticity of the lung tissue is the chief cause, while others maintain that the abdominal muscles are the main factors.

I believe that neither is absolutely correct. In my

respiration respiration is brought about in the following manner. "After inspiration is accomplished and the lungs are filled with air, the diaphragm and intercostal muscles relax." An entirely passive respiration never takes place. The muscular fibres of the "internal bronchial tubes" contract upon the contained air, somewhat similar to that occurring in the transition stage of the respiration of

a stimulus, with this difference, that in the former case it occurs rythmically; the muscular fibres being in a state of relaxation during inspiration. The nervous mechanism being somewhat similar, the impulse being sent down from the expiratory centre in the the medulla oblongata.

The elasticity of the air-cells aids in so far, as they react on the air forced into them by this action of the "ultimate

bronchial tubes." The air finding resistance to escape in that direction, will naturally escape in the direction of least resistance, i.e. toward the opening in the larynx.

Other organs aid in this process of expiration. The elastic sternum and costal cartilages are put on the stretch by the elevation of the ribs, and when the intercostal muscles cease to act, they resume their natural position; thus diminishing

the size of the thoracic cavity. In like manner the abdominal walls are put on the stretch when the diaphragm descends, pushing down the abdominal viscera; hence, "when the diaphragm relaxes, the abdominal walls return to their place, and by pressing on the abdominal viscera push the diaphragm up again into its position of rest."

The internal intercostal and the triangularis sterni muscles probably also aid in redusing the size of

the cavity of the chest.
In normal expiration the latter agencies probably only aid by removing the impediment to the contraction of lung tissue. In forcible expiration the abdominal muscles doubtless become very important expiratory agents, as may be seen in the act of coughing, &c.
There are other agencies which aid forcible or labored expiration in the discussion of the actions of which I need not enter here.
"Besides the movements of respiration belonging to the chest

there are similar changes of expansion and collapse in the larynx." The size of the glottis is alternately enlarged and diminished. At inspiration the glottis is enlarged and collapses during expiration. These movements are the "respiratory movements of the glottis."

"Vital capacity" is the amount of air which can be inspired and expired by the greatest efforts. The air remaining in the lungs after the most forcible expiration is called "residual air"; and

that which is inspired, and expired in ordinary respiration is called "tidal air."

The movements of respiration in man follow each other with considerable regularity. The average number being about twenty per minute in the adult. There are many conditions which affect the rate of the respiratory movements, as age, standing, running, jumping, emotions, &c.

The quantity of air used in every respiratory act varies in different individuals,

and under different conditions, the average amount being estimated at about 320 cubic centimetres.

Air does not reach the air-cells directly as it is inspired, but gets into them chiefly by diffusion, aided by the movements contractions of the small bronchial tubes during expiration. The air within the air-cells, gives up some of its oxygen to the blood and receives in return an amount of carbonic acid. The air losing about 4% of its oxygen and gaining about 4% of carbonic

acid. The temperature of the air is elevated, and it also gains a certain amount of moisture.

The exhalation of carbonic acid by respiration varies. The carbonic acid exhaled during a given time, is increased by muscular exertion or any other physiological activity of the system, and is diminished by quietude, during sleep, and in a state of inanition." The quantity exhaled during digestion is greater than in a fasting condition.

The nitrogen inhaled does not participate, only returning as a diluent or what is for

the oxygen. "While the air, passing in and out of the lungs, is thus robbed of a portion of its oxygen and loaded with a certain quantity of carbonic acid, the blood, as it streams along the pulmonary capillaries undergoes important changes."

The dark blood of the venous system entering the right ventricle through the right auricle, is propelled through the pulmonary artery to the lungs. As it enters the left side of the heart, it is of a bright scarlet hue, to be changed to dark venous blood again as it passes through the

capillary system.

The changes of color in the blood are due to the absorption of oxygen in the lungs, and the giving off of this oxygen as it passes through the capillaries of the body. The hemoglobine has greater affinity for carbonic oxide than for oxygen.

"The absorption of oxygen by the blood does not follow the same law of absorption according to pressure. The phenomena on the other hand suggest that oxygen in the blood is held by some peculiar combination with a substance or some substances

present in the blood. The combination being of such a kind, that dissociation readily occurs at certain pressures and certain temperatures."

The hemoglobine which constitutes about 90% of dried red corpuscles is this substance.

The hemoglobine containing oxygen in combination is called oxyhaemoglobine, and is of a bright scarlet color, while that from which the oxygen has been removed is called reduced hemoglobine, and is of a purple color. How this dissociation in the capillaries occurs is not well known.

The carbonic acid is carried by

the serum of the blood, the nature of the combination being imperfectly understood. The majority of authorities seem to think that there is a state of combination with the alkalies of the serum.

A small quantity of nitrogen is present in both venous and arterial blood, existing "partly in a state of simple solution, partly in some lose chemical combination.

The respiratory changes occurring in the lungs probably take place on the principle of diffusion of gases, according to Prof. Miles. The oxygen of the

and the carbonic acid in the serum of the blood passing into each cell. Prof. H. also thinks that probably there is something in the epithelial layers of the lungs which assists in liberating the CO_2. The nature of the respiratory changes occurring in the tissues is not well understood. We only know that the oxygen taken into the system and its return is in the combination of CO_2.

End.

Antisektics
by
M. Gibson Porter
Lonaconing
Md.

Dec. 31. 1885.

Antiseptics

Within the last quarter of a century surgery has made an advancement unequalled in any other branch of medical science. This advancement has been due to the experiment into the pathology of wounds, and depended upon the accumulation of the germ theory of disease. This study was in its infancy when Lister first conceived the idea of employing agents destructive of life in order to prevent decomposition in the healing of wounds having this practice on the theory that decomposition was due to the presence of minute organisms in the air. At the present day this

theory is by most pathologists considered to be the true explanation basing their belief on clinical and laboratory experiments.

Clinically we have many important proofs of this theory among which are the following: 1st. It has been found that in open wounds where there has been an opportunity for germs to gain access and where no measures have been taken to prevent their development that invariably they have been accompanied by decomposition with the formation of pus and sometimes with serious general disturbances as pyemia. 2nd. In subcutaneous

wounds where there is no opportunity for atmospheric germs to gain access we do not have decomposition taking place. Also in wounds that have been so treated as to prevent access of atmospheric germs the same result is obtained. 3rd. It has been found by experimental inoculation of the decomposed secretions of a wound into healthy tissue that inflammation is set up accompanied by blood poisoning and ending in an abscess; whereas by the inoculation of the same secretion deprived of its micro-organisms by means of an antiseptic or

some process of removal no harm results. For these reasons in treating wounds agents exerting a toxic influence on organic life have been tried by various experimenters and will be considered beginning with the agent that was first used for this purpose and which introduced a new branch of surgery universally known as Listerism, this agent was carbolic acid. Lister first employed antisepsis in the treatment of compound fractures his idea being to put the wound in the condition of a simple fracture accompanied by a wound of the soft parts. It is success

remarkable. It was first employed, as stated above, as carbolic acid. His attention was called to carbolic acid by an account of its use in the sewage of the town of Carlisle. It not only prevented all odor from the cloths impregnated with the serious material, but, as it is stated, destroyed the entozoa which usually infest cattle fed upon such pastures. He began his experiments in 1865. At first he employed the pure carbolic acid on a piece of lint having previously thoroughly irrigated the wound with it, but this was found to be too

caustic in its action causing him to substitute first a solution of carbolic acid in water and later a mixture of olive oil and carbolic acid. But by this method too much attention was required to keep the wound under the influence of the agent on account of the volatility of carbolic acid. To obviate this he first used a covering of oiled paper but finding this inadequate he substituted block tin. The present Listerian dressing as given by Cheyne is as follows. Carbolic gauze is the dressing employed; and to prevent the irritation of the

healing edge of the wound by the carbolic acid a piece of protective is interposed between the wound and the gauze. This piece covers the wound next a piece of gauze saturated with a two and a half percent solution of carbolic acid is placed over the protective this overlaps the gauze on all sides. The gauze and protective are known as the deep dressing. Then all hollows that exist in the neighborhood of the wound are filled up with carbolic gauze and special masses of this are placed where the greatest discharge is expected. Outside of this is placed a large

gauze dressing consisting of a piece of gauze of sufficient size folded eight times with a piece of Macintosh cloth interposed between the last layers. This is made secure by suitable bandages. The dressing is done under the spray. Change of dressing if discharge is through or any other indication of trouble. The dressing should not be left unchanged more than a week on account of evaporation of the carbolic acid. Listerism variously modified is used by many surgeons but many on the other hand have their own favorite antiseptic. In Germany other antiseptics are preferred

Pelch reckons the value of antiseptics on three things.

I Its power as a germicide or [illegible]

II Its immediate local effect on the wound surface neutral irritant or caustic.

III. Its remote constitutional effect when absorbed into the general circulation.

Sternberg found the germicidal strengths of the principal antiseptics in use to be as follows

Table of Germicidal Strengths.

I.	Bichloride of Mercury	.005 %
II.	Permanganate of Potash	.12 %
III	Iodine-Iodoform 900% I.	.2 %

Table of Germicidal Strengths cont.

IV.	Carbolic Acid	1%
V.	Zinc Chloride	2%
VI.	Salicylic Acid	4%

In the same article we find the following proportions necessary to restrain germ development.

Table of Strengths as Germ Restrainers.

I.	Mercury Bichloride	.003%
II.	Iodine	.025%
III.	Carbolic Acid	.2%
IV	Salicylic Acid and Borax ia	.5%
V.	Boracic Acid	.5%
VI	Sodium Biborate	1%

It will now be in order to consider the antiseptics chiefly in use.

I. Mercury Bichloride or Corrosive Sub

limate.

From these facts we can readily see that the strongest antiseptic agent at present in use is the corrosive chloride of mercury. It has all the qualities necessary for practical and climate practice and is coming into use more and more every day. The fear of the toxic effects of corrosive sublimate prevented its use for a long time. Koch gave it the push that sent it into dominance accomplishing with it in 1% solutions what had never been accomplished by any previous antiseptic. The destruction of the bacilli

[illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible]

operated upon by Prof Winslow for sys pneumothorax the day before under irrigation with corrosive sublimate solution. The student in charge being directed to wash out the cavity with .05% solution next morning he did so, but while the Professor was going through the wards, about two hours later the cavity was again washed out and I think that the salivation was very likely due to this serous cavities being very absorbent. By some persons it is directed to wash out such absorbing surfaces with a weaker solution .02% being usually preferable. When proper precautions are taken with bichloride solution

such accidents as those noted above will not occur unless the patient is especially susceptible.

II. Permanganate of Potash.

This agent is next in efficacy, as a germicide, to the bichloride but is of little value as an antiseptic dressing because it decomposes too rapidly when brought in contact with organic substances, thereby requiring frequent change of dressing, an item of vast importance in treating wounds as they should be disturbed as little as possible.

III. Iodine

Iodine has been in use for a very long time as a surgical

a solution to wash it. Bryant recommends it very highly. He uses a solution of the tincture in hot water, about 2½%. It stops the oozing, and tends to form a glaze over the surface of the wound elements most conducive to satisfactory repair. As a germicide the corrosive sublimate is twenty five times as great, and as a germ restrainer eight times; whereas Iodine is about two and a half times as great as carbolic acid as a germicide, and eight times as great as a germ restrainer.

Iodoform.

The most efficient and most popular of all the antiseptics contains 7½% iodine (Battelow). This agent was discovered in 1822 by Seullas and was used internally as a means of administering iodine. In 1880-1 Prof. Mosetig of Vienna wrote a series of articles on its use as an antiseptic. Its advantages called it into immediate and almost universal use, and with it we have the dry-powder dressing introduced. It restrains wound secretions; prevents putrefaction; destroys putrefactive germs and is unirritating, all advantages of the highest order. It also seems to retain

showing an anaesthetic property, greatly to be desired. It is usually better to irrigate the wound surface with some other antiseptic and use the iodoform as a permanent dressing. In Billroth's clinic the iodoform dressing is preferred. For closed wounds several layers of iodoform gauze is used, being kept in place by a roller bandage. For open wounds the gauze was introduced into the fissures etc. of the wounds, and the remaining cavity filled loosely with the gauze, a double layer of the gauze is then laid upon it overlapping the edges of the wound

and the remainder of the dressing like for a closed wound but no compression to be allowed. Dressings is generally to be changed about every eight days. A change of dressing indicated when temperature reaches 102° F. & of suppuration takes place change every day. The disadvantages of iodoform are almost nothing in comparison with other antiseptics its odor and toxic tendency being the chief objectionable properties.

IV. Carbolic Acid.

This agent has been discussed under Listerism and here only

its advantages and disadvantages will be mentioned.

1. Its reliability. It acts very efficiently in comparatively weak solutions in treatment of wounds.

2. Its diffusibility. Does not tend to destroy tissue when used in proper solutions, and mixing readily with wound secretions it is carried to all parts of the wound

Its disadvantages are three.

1. It sometimes excites local inflammation.

2. It evaporates rapidly, requiring constant renewal.

3. Its sometimes produces toxic effects. In large doses the patient

is thrown into a condition of shock, followed by death by failure of respiration. In small doses it produces severe gastric derangements.

Subnitrate of Bismuth.

Kocher of Berne highly recommends this agent as an antiseptic dressing, but as cases of acute decumative nephritis have been reported as a result of its use it would certainly be better to use safer antiseptics.

From the above it is evident, that were immediate death of germs is desired that the bichloride of mercury is applicable, hence

in performing operations it is generally used to wash off continuous surfaces and to keep the wound clean while operating. Either the bichloride or carbolic may be used in preparing ligatures, sutures and dressings. Carbolic acid is used for cleansing the instruments inasmuchas corrosive sublimate corrodes them. As an application to the wound directly, iodoform is preferred in this country and Germany. Various absorbent materials are used, anything that is clean and clean will answer. Sawdust, Oakum and lint are the ones that have been in general use.

The surgeons who do not employ antiseptics practice extreme cleanliness in all they do, and to this their success is due. It may be that the success of antiseptic surgery is dependent upon the irregular ablutions to which a part is subjected in performing an operation, and by those who do not employ antiseptics this is said to the fact, but it is certain that in all hospital practice, on account of the lack of cleanliness antiseptics are necessary. 73e. this as it may, it is certain that the results that have been accomplished in the last twenty years by surgeons have been due to the introduction of antiseptics in the treatment of wounds.

Geo. S. Silljacks

Typhoid Fever

Definition

An acute febrile disorder characterized by a peculiar Eruption on the abdomen, diarrhoea, stupor and low delirium, by ulceration of Peyers patches, infiltration and [illegible] of the Mesenteric glands.

Causes & History.

Typhoid fever is a disease of world wide prevalence generally occurring in an endemic form, but some time assuming the form of an epidemic. It is not restricted to any class of society or to any age. It makes no distinction between the rich or poor. The infant as well as the old

are liable to this dreaded disease. Has no regards for sex, it is more frequent found in the young than in the old. The confusion that has existed up to late years in regards to Typhoid and Typhus fever, renders the exact knowledge of their causation almost impossible, but now they are recognized as separate specific diseases and thus much light has been shown as to their origin.

It seems to be proven now beyond a doubt that Enteric or Typhoid fever is the fever of fecal decomposition and that it only occurs among those subjected to influence of defective drainage and overflowing

Cesspools and associations when they become contaminated with articles they use for food, the water they drink or the air they breath, it has been said that those who are continually working in sewers never have Typhoid fever, but even if this was the case, which is not, we have so much to prove that it does depend on fecal decomposition that we are compelled to adopt that opinion.

Typhoid Fever is not in the usual sense of the word Contagious that is directly communicable from one person to another, but its Contagiousness consists in coming in contact with decomposed feces, or the fresh

feces of a typhoid patient is not sufficient to give off the specific virus of typhoid fever, but as soon as it becomes decomposed it does and this is the reason that those who nurse typhoid fever patients are not liable to it, but numerous cases are on record where fresh attacks of it have been traced directly to contaminated feces. It is finally clearly proved that the virus is introduced into the system by absorption from the alimentary canal and that the lesions are the local manifestations. One attack is said to protect the patient from subsequent attack, but it has been noticed when patients have been

attack more than once, if this be true the exemption is less perfect than in other specific contagious fevers-

Symptoms.

After a more gradual approach than that of any other fever with langour, debility, headache anorexia for several days, Epistaxis, a bronchial cough, and general nervoness are the general symptoms of Typhoid. The patient is confined to his bed with a violent fever the thermometer rising from 103° to 104° and higher, nausa and pulse quick the tongue at the base covered with a thin coating, the tip and Edges

reden. The bleeding from the nose comes on the first week also the head-acke, which disappear soon, the face assumes a purplish red flush. The patient lies in a more or less comatose condition delirous especially at night. Generally about the second week there is more or less lost of hearing and sight. Swelling of the belly Tympanites is almost always present at the end of the first week. Some times, but not always diarrhoea is present coming on about the same time. Rose color spots make their appearance over the abdomen and fade upon pressure they make their appearance at the

End of the second week. On pressing over the right iliac region there is a marked tenderness, and a peculiar gurgling sensation under the fingers. Sudamina over the chest is not uncommon. Pyrexia is seldom from the start less than two weeks and it has been known to last for two or three months, but one month is the general average time from going to bed until the patient becomes convalescent. In severe cases the symptoms are a dicrotous pulse (subsultus tendinum) retention or suppression of urine hemorrhage from the bowels &c. and if death is soon to follow

hiccough cold clamy feeling and involuntary discharges from bowels. Sometimes bed sores will be present from patient lying continually in one position, and after convalescens we often have abcesses. There is great danger of perforation of the bowels, taken place by ulceration of Sayers patches, and when this occurs there will be violent peritonitis set up and almost always terminate fatal. The pulse beats faster some times very little above normal and from that up to 120-180 or even more per minute.

The respiration is generally

accelerated and if there be a complication of Pneumonia or Bronchitis there will be considerable accelerations.

The temperature is higher in the Evenings and falls in the mornings, the temperature begins to rise about noon and attains it maximum between 5th P.M. and midnight and then it begins to fall and reaches it lowest point between 6 and 8 A.M. There is generally a difference of 1° to 2° between the morning and the Evening temperature. In ordinary cases the temperature will range from 102°-3°-4° and towards the

End of the second week will begin to fall. In some cases the temperature may go to 105° to 106° or even more if death does not occure. When a sudden rise in temperature takes place there are indications of a complication such as pneumonia.

The tongue some times does not present any abnormality it becomes dark and dryer than usual is covered with a white fur except at the tip and edges which become red and raw. The throat and tonsils are generally congested and swollen. The whole circulatory system undergoes a change.

Diagnosis —

From Intermittent fever by the gradual approach of the fever symptoms and by the absence of remissions. From Typhus fever in Typhus we have no Epistaxis, bowels constipated, rarely, seldom tympanitis, miliary Eruption. Death in 6-10 days countenance downcast red. In Typhoid we have Epistaxis and Bronchitis, diarrhoea tympanitis, gurgling, rose spots, death rarely within fourteen days countenance reddish red. From Miliary Tuberculosis this is a disease which has given trouble in making the diagnosis, fine rales in both lungs

in Miliary Tuberculosis while in Typhoid they are coarse, rapid Dullness at once in Tuberculosis while in Bronchitis & Typhoid the dullness is at the base. In Tuberculosis the rapid rise of temperature in first few days up to 106° where in Typhoid it is slower the spleen in Typhoid is enlarged while in Miliary Tuberculosis it is not.

Prognosis

In ordinary cases the patients will recover under proper treatment, but Even then we must be guarded in our prognosis as there is always a liability of the ileum becoming perforated

which will be followed by peritonitis and nearly always end in death. If complications be present it makes the disease more dangerous according to the severity of it, and upon the whole it is best never to give too favorable a prognosis however slight the attack may be.

Treatment.

Knowing as we do that the exciting cause of Typhoid fever we should not fail to adopt such precautions which will avoid the possibility of any one coming in contact with the Typhoid miasm. All feces should be immediately disinfected. To prevent antiseptic such

as Carbolic acid. Chloride of Lime or Chlorine water, before they are disposed of, or thrown into a pit dug in yard and disinfect them with coarse powder of the Sulphate Iron in bottom of chamber and Muriatic acid on top and then burnt them. All napkins and vessels &c. should be wash in some antiseptic wash. All improper drainage should immediately be corrected, and care should be taken to prevent the drinking water or water that is used for culinary purposes being contaminated with any impure material. Cases are on record in which the contagion has been carried by milk adulterated.

with impure water. As Typhoid fever is a self limited disease, we can not hope to do more than to support the vital powers by aiding nature, and by treating the symptoms as they come on. To reduce the fever give large doses of Quinine, and when it runs very high then use cold water, the bath or sponging, begin with sponging with water 10° below that of the body, Sponge the patient until the thermometer indicates that the temperature is on the desent. Great care should be taken as not to chill the patient. The condition of the bowels should be looked after and if the patient passages exceed

two or three in twenty four hours, it must be check by some astringent as sub Nitrate of Bismuth, Lead or Tannic acid does well to combine these agents with Opium. If the bowels be constipated never use drastic purgatives, but give mild Laxatives such as castor oil &c. and even this should not be used after ulceration has taken place. Hæmorrhage from the bowels should be restrained by the use of Opium Gallic or Tannic acid and Ergot. Turpentine is most important astringent to the alimentary canal 10 or 15 gtts in Emulsion, use cold applications to the abdomen, but dont make any

pressure, leave it on for 15 minutes
Stimulants should be given when
the heart begins to fail and pulse runs
up. Carbonate Ammonia and Whiskey.
Special attention should be given
to the bladder, for it is often over
distended and nurse is deceived by
there being a constant dribbling
When the urine is retained draw
it of with a catheter. To avoid
perforation of the bowel do not use
purgation, or solid food, check
diarrhoea and let the bowels be at
rest as much as possible. Relieve sick
stomach by ice water and lime
water. When symptoms of perforation
are present keep the patient under

the influence of Opium or Morphia hypodermically. If hemorrhage occur intestinal movements must be suspended by opium, the flow of blood controlled by Ergot hypoder-mically, and ice on the abdomen Tannin, alum may be used internally If the tongue is dark and dry, if there is great thirst and abdomen much distended with gas turpen-tine in XV-XX gtts is very useful. Bed sores should be looked after before the skin breaks a wash of Alcohol & Goulards Extract to harden it. The thing to be kept in mind above all others in the treatment of Typhoid fever is the diet, no solid

food should be taken until several days after all febrile symptoms have disappeared. It should consist of a stimulating and easly digestable nutritious fluid such as milk gruell, barley water, rice water, but the best of all is proper prepared beef tea, when there is a tendancy to collapse give stimulants. It should not be forgotten that perforation has often taken place several weeks after all febrile symptoms have disappeared thus the return to solid food should be gradual and consist of small quantities of lamb or chicken is very good.

Must be careful as to the Complication which may come on as Pneumonia a sudden rise in temperature with fast breathing, then treat this very often calls for stimulants Whiskey Carbonate Ammonia in v gr doses Femoral Phlebitis may occur but there is no Explanation to it. Envelope limb in Cotton and rest.

Tendancy to relaps, having been free from fever and only debilitated a sudden rise of temperature, treatment is same as in primary case.

Hygiene must be looked after the room should be kept at a temperature from 55° 60°, the Evacuations must be

removed at once.

After the fever has disappear tonics are required to build up the general health and a change of air is often beneficial.